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American Veterinary Medical Journal

AMERICAN VETERINARY REVIEW

EDITED BY

PROF. A. LIAUTARD, M.D., V.M.

Member Central Society of Veterinary Medicine (Paris). Honorary Fellow Royal College Veterinary Surgeons (England). Foreign Corresponding Member Academy of Medicine, Bruxelles (Belgique),

AND

Prof. ROBERT W. ELLIS, D.V.S.

WITH THE COLLABORATION OF

Prof. W. J. COATES, M.D., D.V.S., New York-American Veterinary College.

OLAF SCHWARZKOPF, Veterinarian, 3d Cavalry, Instructor Mounted Service School, Ft. Riley, Kan.

Prof. W. REID BLAIR, D.V.S., New York-American Veterinary College.

Prof. S. STEWART, Kansas City Veterinary College, Kansas City, Mo.

Prof. M. H. MCKILLIP, M.D., V.S., McKillip Veterinary College, Chicago, Ill.

B. F. KAUPP, M.S., D.V.S., Commissioner of Public Health, Spartanburg, S. C.

Prof. M. H. REYNOLDS, University of Minnesota, St. Anthony Park, Minn.

WM. H. DALRYMPLE, M.R.C.V.S., Veterinarian Louisiana Ag. Exp. Sta., Baton Rouge, La.

JOHN P. O'LEARY, V.M.D., Veterinary Inspector in Charge, B. A. I., Troy, N. Y.

A. T. KINSLEY, M.Sc., D.V.S., Path. Kansas City Veterinary College, Kansas City, Mo.

Prof. S. SISSON, S.B., V.S., Prof. Comp. Anat., Ohio State University, author of Sisson's Vet. Anat., etc., Columbus, O.

J. G. RUTHERFORD, V.S., H.A.R.C.V.S., Ex-Veterinary Director-General and Live Stock Commissioner, Ottawa, Canada.

J. F. DE VINE, D.V.S., Dept. Agr., Goshen, N. Y.

D. ARTHUR HUGHES, Ph.D., D.V.M., Insp. Comm. Dept., U. S. Army, Chicago, Ill.

JOHN R. MOHLER, V.M.D., Chief of Pathological Division B. A. I., Washington, D. C.

Prof. L. A. MERILLAT, V.S., Chair of Surgery, McKillip Veterinary College, Chicago, Ill.

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GEO. H. GLOVER, M.S., D.V.M., Director Div. Vet. Sci., Colo. Agr. Coll., Ft. Collins, Colo.

J. DESMOND, Ex-Chief Gov't Vet. Surg., Adelaide, So. Australia.

NELSON S. MAYO, M.S., D.V.S., Secretary A.V. M. A., 4733 Ravenswood Avenue, Chicago, Ill.

And several others.

VOLUME XLV.

NEW YORK:
PUBLISHED BY AMERICAN VETERINARY REVIEW,
509 WEST 152d STREET.

597759
7.12.54

SF
601
A5
v.45
cop.2

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AMERICAN VETERINARY REVIEW.

APRIL, 1914.

EDITORIAL.

EUROPEAN CHRONICLES.

Paris, February 15, 1914.

TENTH INTERNATIONAL VETERINARY CONGRESS, LONDON.—I have received the preliminary programme of this important meeting which will be held in London from the 3d to the 8th of August, 1914.

It is the jubilee congress, and is being held in London by the express desire of the veterinarians of the world in honor of the distinguished English veterinarian, John Gamgee, at whose suggestion international veterinary congresses were first instituted.

Foreign countries have been invited to send official delegations, and the British committee of organization has extended a hearty invitation to their foreign colleagues in every country. Visitors are invited to reach London on Saturday, the 1st of August, as on the evening of Sunday there will be a preliminary reception, to enable members to meet each other, discuss arrangements for the official opening of the congress and obtain any further information regarding the arrangements they may desire.

The official opening will take place on Monday, the 3d, when the committee hope to secure the patronage of an exalted personage to open the congress. Arrangements as to this matter have not yet been completed.

The meetings of the congress will be held at Central Buildings, Westminster, London, which offer exceptional facilities for the purpose, and are close to the houses of Parliament.

The entertainments will be numerous. The foreign office will

give one and the British committee has organized excursions, such as visits to noted herds and studs, to the quarantine and research stations of the Board of Agriculture, to places of historical interest and places noted for beautiful scenery.

Arrangements for traveling will be made on behalf of the members of the congress and the accommodation at hotels and restaurants will prove very moderate. A list of hotels with their charges will be presented later.

In relation to membership, the British committee have fixed the amount of subscriptions for ordinary members at £1 (say $5). Subscriptions for lady members at five shillings. Subscriptions should be sent to the Honorary Treasurer, Mr. T. W. Garnett, M.R.C.V.S., 10, Red Lion Square, London, or the treasury of the several national committees.

* * *

At a meeting of the organizing committee, held the 9th of January, where many members were present and where the secretary made his report in relation to the many invitations that had been sent to foreign and colonial officers, to veterinary schools which were not government institutions, etc., etc. The treasurer also made his report, after which the secretary presented the following as being the general arrangement for the general meetings with the list of the reporters of the various subjects:

GENERAL MEETINGS.

1. OFFICIAL OPENING.

2. *Foot and Mouth Disease.* (Reporters marked * have not yet replied.)—Herr Dr. Nevermann, Berlin; Inspector E. Leclainche, Paris; *Dr. Mohler, Washington, D. C.; Dr. Remmetz, of the Hague; Prof. E. Hess, of Bern; Prof. Mettam, of Ireland; Dr. Josef Rudovsky, of Brunn.

3. *Tuberculosis.*—Prof. Dr. Eber, of Leipzig; Prof. Vallée, of Alfort; Prof. Sir McFadyean, of London; Mr. G. Rigner, of Stockholm; Prof. de Jong, of Leiden.

4. *Epizootic Abortion.*—Prof. Dr. Zwick, of Berlin; Prof. Moussu, of Alfort; Sanitary Officer Sven Wall, of Stockholm; Sir S. Stockman, of London.

5. *Public Control of the Distribution and Sale of Milk in the Interests of Public Health.*—Dr. A. D. Melvin, Bureau Animal Industry, Washington, D. C.; Prof. Dr. von Ostertag, of Berlin; Mr. S. Nystedt, of Stockholm; Mr. Brittebank, of Manchester.

6. Closing Meeting.

Section 1. Veterinary Science in Relation to Public Health.

1. *Meat Poisoning—Its Pathogenesis and Measures Necessary to Guard Against It.*—Prof. Bougert, of Berlin; Dr. Hans Messner, of Karlsbad; *Dr. Guillaume de Nice.

2. *General Principles to Be Observed in the Inspection of Carcases and Organs of Tuberculous Animals with a View to Determine Their Safety as Articles of Human Food.*—M. le Dr. Stubbe, Brussels; M. Cesari, Paris; Herr Dr. Nieberle, Hamburg; *Herr Hy. Hansson, Stockholm.

3. *Disinfection of Waggons.*—M. le Prof. Dr. Bidart, Université, Buenos Aires; Herr Dr. Titze, from Berlin; M. Rabieaux, Paris; *Prof. Meloni de Naples.

Section 2. Pathology and Bacteriology.

1. *Johne's Disease.*—M. le Dr. Olaf Bang, Copenhagen; Herr Prof. Dr. Miessner, of Hanover; Mr. A. L. Sheather, B.Sc., M.R.C.V.S., from London.

2. *Bovine Piroplasmonis (European).*—Prof. Dr. Knuth, of Berlin; M. le Prof. S. von Ratz, from Budapest; Mr. W. G. Wragg, M.R.C.V.S., from London.

3. *Ultra-Visible Viruses.*—Dr. K. F. Meyer, University of California, U. S. A.; M. le Prof. Panisset, Lyon; *Herr Dr. Pfeiler, Bromberg.

4. *Distemper—Etiology and Vaccination.*—Herr Prof. Dr. S. Sigismund Markowski, Lemberg; M. Carré, Alfort.

Section 3. Epizootiology.

1. *Anthrax.*—Dr. W. H. Dalrymple, Louisiana State Uni-

versity, U. S. A.; Herr Dr. Aladar Lukacs, from Budapest; Herr Prof. Dr. J. Szpilman, from Lemberg; Major Holmes, Muktesar, India.

2. *Swine Fever.*—Dr. Marion Dorset, U. S. A., Department of Agriculture, Washington; Herr Prof. Dr. Hutyra, Budapest; *Herr Dr. R. Frauenberger, from Austria; *Herr Dr. Glässer, from Hannover.

3. *Glanders.*—M. M. de Roo, from Brussels; M. Drouin, of Paris; Herr Prof. Dr. J. Schnürer, from Vienna; Mr. J. R. Jackson, M.R.C.V.S., Board of Agriculture, London; Herr Prof. Dr. Peter, of Hanover.

4. *Sarcoptic Mange of the Horse.*—M. le Vétérinaire Principal A. Barrier, Paris; Col. Butler, from London; Herr Theophil Halski, Czernowitz, Austria.

Section 4. Veterinary Medicine and Surgery.

1. *Anaesthesia.*—M. le Prof. Hendricks, from Brussels; Dr. L. A. Merillat, Chicago, U. S. A.; Herr Prof. Vennerholm, of Stockholm; Prof. G. H. Wooldridge, of London.

2. *Laminitis.*—M. le Prof. Lienaux, from Brussels; M. le Vétérinaire Principal Joly, Tours; Prof. James Macqueen, from London.

3. *Surgical Treatment of Roaring.*—Herr Prof. Dr. Eberlein, of Berlin; Dr. W. L. Williams, of Cornell University, U. S. A.; M. le Prof. Dr. Fontaine, from Saumur; Mr. F. T. G. Hobday, F.R.S.E., F.R.C.V.S., of London.

4. *The Use of Drugs in the Treatment of Disease Caused by Nematode Worms.*—M. le Prof. Van den Eckhout, of Brussels; M. le Prof. Railliet, from Alfort; Prof. J. F. Craig, M.A., M.R.C.V.S., from Dublin; M. le Prof. Perroncito, R. Università di Torino, Turin.

Section 5. Tropical Diseases.

1. *Diseases Transmitted by Ticks; Their Classification, Treatment and Prevention.*—*Dr. D. E. Salmon, Washington, U. S. A.; M. le Prof. J. Ligniéres, from Buenos Aires; Sir A. Theiler, K.C.M.G., Transvaal; Mr. C. E. Gray, M.R.C.V.S., Transvaal; *Dr. Paulo Parreiras Horta de Rio de Janeiro.

4. *Diseases Transmitted by Winged Insects; Their Classification, Treatment and Prevention.*—M. Cazalbou, from Rennes; Mr. R. E. Montgomery, M.R.C.V.S., from East Africa; *Dr. L. O. M. Howard, Washington, U. S. A.; *Dr. Pinto Guedes, Rio de Janeiro; *Dr. Christino Cruz Filho, Rio de Janeiro; Prof. A. Lanfranchi, Parma Italie.

(The list was adopted.)

* * *

Applications of the Roentgen Rays.—In *Arhiva Veterinara*, the excellent journal of veterinary medicine, published by the Faculty of the High School of Bucarest, Dr. *Sava Joan*, of the laboratory of contagious diseases of Professor C. S. Motas, there is an important article on the X-rays, whose application constitutes that part of science known as *radiology*.

Medical radiology, says the writer, is divided in two principal branches, the radioscopy and radiography on one side, and radiotherapy on the other. This being established, Dr. Sava Joan enters in long details on this last, considering all the generalities relating to it, necessary elements, Rayons X, in general, their physiologic action, and their applications in human medicine, in diseases of the nervous system, in tuberculous diseases, in malignant tumors and then comes to those in veterinary medicine

In that branch of medicine, Rayons X have been used but little with a therapeutic object. Those who have paid attention to it are Eberlein and Beyreuther.

"In 1907 the first submitted to the action of Roentgen rays a horse affected with canker of the foot. Three times a week, during ten minutes each time, the rays were applied. After 21 sittings there was no more proliferation of the tissue, but recovery was not radical. Another horse having the same trouble was also treated three times a week," but the result was negative, the horse grew worse.

The rays were also tried in bothriomicosis.

" In 1912, Eberlein, following the works of Beyreuther, made direct irradiations in bothromic tumors and obtained their removal."

Dr. Sava Joan has used the rays in a dog affected with sarcoma of the lower region of the neck, giving him five sittings of 15 seconds every three days. Fifteen days after the first application the dog died on account of his greatly debilitated condition. There was no change in the condition of the sarcoma.

* * *

But these are not the only cases alluded to by the author of the article of *Arhiva Veterinara*. He publishes a series of observations, thirteen in number, relating to the treatment of *dermodectic mange in dogs by the X-rays.*

In these thirteen cases observed in dogs of different breeds, varying in age, but rather young, the follicular mange was observed localized and generalized, under the pustular or the squammous form and complicated in some with distemper. *Radical* recovery has been the rule. Death occurred with distemper in two cases and from general anemia in one. The number of sittings to which the animals were submitted varied in number according to the extent and location of the diseases and had duration which varied between 10 and 15 minutes. The treatment is long and in these cases has varied between one and five and a half months.

After making a few general remarks on the analysis of these cases, Dr. Sava Joan concludes:

1. Dermodectic mange with squammous form is rapidly cured by X-rays. 2. The limited pustular form is also, providing the number of sittings is increased. 3. The duration is from 1 to 2½ months, depending on the severity of the case and the sensibility of the skin. 4. Old and generalized dermodectic mange is not influenced by X-rays; on the contrary, they seem to hasten death of the patient.

The well-known rebellion of follicular mange against most therapeutic agents had stimulated the inquiries of specialists in skin diseases of dogs and the publication of the learned doctor of Bucarest brought Dr. Roussel, one of them, before the Société Centrale de Medecine Vétérinaire, when he declared that more than eighteen months ago he had tried the application of the X-rays in the treatment of follicular mange and that all his experiments had failed.

In collaboration with a physician, chief of the laboratory of radiology of a hospital, he had submitted dogs to the X-rays, one, two and three times a week, for two, three, four, six and even eight months and that the treatment had always failed. During the treatment the disease seemed to improve, to resume a new development as soon as it was stopped.

"At any rate, said Dr. Roussel, I have noticed that whatever therapeutic is used against that disease, improvements are often observed at the beginning to be followed in most cases by complete failures."

The Bucarest treatment needs confirmation.

* * *

Spontaneous Sedimentation of the Blood.—In years gone by, when the great discoveries and application of hematology were unknown, the phenomena that could be observed in the blood were considered of no little importance, and the diagnostic and prognostic deduction that were made by the peculiarities that were noticed constituted important elements that practitioners were anxiously taking advantage of. To-day, physicians without entirely ignoring the peculiarities and changes that the blood may present, can go further and apply better and more thorough knowledge in their study relating to the condition of the blood and principally in looking for the variations that in quantity and in quality the elements of the blood may present.

It is with the aid of the microscope only that those researches can be made and that the numeration of the red corpuscles, the

counting of the white, can be obtained and that valuable information can be gained on the richness of the blood with those elements, on the variations of the hemoglobinic tenor, on the importance of polynucleosis or mononucleosis. But the methods of investigations that we speak of and the hematologic researches that are connected with those questions are very complicated and on that account are not in daily practice, especially in veterinary practice, where a wide application would render most valuable service from a clinical point of view. In other words, cannot a simple method be found which veterinarians could very easily resort to?

Our collaborator, E. Cesari, chief of the Laboratory of the Hippophagic Abattoir in Paris, answers this question in the *Revue Generale* by an affirmation. His method consists simply in taking a few cubic centimeters of blood from a horse and letting its *sedimentation* take place after it has been made uncoagulable by the addition of some special salts, sulphate of magnesium, chloride of sodium, oxalate of soda, citrate of soda or in preference fluoride of sodium, used as dilution to the tenth and in solution of 3 per cent.

The technic of the operation consists in aspiring a little over 1 c.c. of the solution of fluoride into a syringe of Pravaz or a like of 10 c.c. size, introducing the needle into the vein (the jugular best), taking 9 c.c. of blood and then after withdrawing empty it into a cylindrical vial, or test tube, doing it slowly and being careful to avoid the formation of foam. The vial or tube is then put on a stand, and left in a vertical position until sedimentation is completed, 24 hours is the maximum, when measures are taken of the height of the red sediment (hematies), that of the white (leucocytes), that of the entire contents as far as the level of the plasma and the peculiarities between the different layers are called upon to give the elements of the clinical examination of the blood.

* * *

The process of sedimentation begins and will take between 12 and 24 hours to be completed.

The dropping of the red corpuscles begins almost immediately, progresses rapidly and then becomes slower. As the hematies are falling and collect at the bottom of the glass, the plasma becomes clearer and forms at the upper part of the tube a column whose height will vary. Soon then, on the surface of the red sediment there appears a greyish white ring formed by the white corpuscles. And when the process is completed there is a red deposit which represents the volume of the hematies and a white which represents that of the leucocytes.

At this point Mr. Cesari goes on with the deductions that can be made by the examination of these three portions, contained in the glass tube and terminate by the consideration of the clinical applications of his method.

The various indications thus obtained upon the composition of the blood by sedimentation permit us to see the importance of the applications of the method to the clinic.

First of all, for all that concerns anemias, it is certain that sedimentation will immediately give information upon the degree of globular poverty of the blood; it will also permit us to appreciate the functional work of the hematopoietic organs and also that of the hemoglobinic value by the rapidity of the dropping of the hematies; and finally it will help to rapidly control the efficacy of the treatment prescribed, whose effects shall be measured by the increase of the red sediment.

For the leucemias, it is scarcely necessary to indicate the diagnostic value of the test by sedimentation.

The peculiarities as well as the variations offered by the leucocytar sediment during the various diseases will, no doubt, furnish precious information from the diagnostic and prognostic point of view, when they will be fully appreciated, as they must be later on by practitioners. Clinical observations will establish them.

The article of Mr. Cesari, the description and the application of his method will attract attention. For veterinarians especially,

it will prove of great advantage, being simple, not demanding expenses, and of easy utilisation. As the author says, it needs very little to make it most appreciable and useful. Will clinicians put it to a test?

* * *

Prof. Eberlein's Surgical Treatment of Roaring.—Although this question is now pretty well settled, in Europe, where the operation of Williams has received such success as confirmed by the many operations recorded by Prof. Hobday in England, and also by the fact of its having been raised in the veterinary schools as the classical operation, its practice being one of the many branches of the department of operative surgery, although all those are facts well established, improving methods, so named by their originator, are now and then brought out.

From the *Archiv. f. weisens und prakt. Tierheilkinde,* the *Annales of Brussels* are producing a new modus operandi, recommended by Prof. Eberlein from Berlin.

There is no doubt, says the learned professor, that the surgical treatment of roaring gives the best results, 70 per cent. recoveries being proved by statistics.

Prof. Eberlein operates as follows: After having the animal well secured on his back, he divides the musculo-cutaneous layer, the crico-thyroid membrane and anesthetizes the ventricles of the glottis. He introduces then the index finger of the left hand in the left ventricle, and stretches the dorsal portion of the corresponding vocal cord by flexing slightly the finger and raising it gently. He then makes with a special pointed bistouri an angular incision measuring 1 to 1½ centimeters, with an edge running along the anterior border of the vocal cord and the other along the ventral border of the arythenoid cartilage.

The result of the operation, according to the author, *depends, in the first place, on the good direction of this angular incision. One must watch that the first incision runs exactly along the anterior border of the vocal cord and especially that it does not*

encroach on it transversally. The very important part to be enacted in the process of recovery by the vocal cord is annihilated when this cord is cut or divided transversally.

Then the author takes out the left index finger from the ventricle and introduces it in the angular wound, and by a slight cork-screwing motion pushes it easily towards the corresponding crico-arytenoid articulation.

This has for its object the isolation of the mucous membrane of the ventricle. Once the bottom of the cul-de-sac is loose, the index finger is then flexed slightly and with a blunt bistouri the mucous membrane is isolated, being extended over the finger as a finger-glove, by pressure of the thumb. The mucous membrane of the right ventricle is removed in the same way.

It seems to us that the method of Prof. Eberlein, good as it may be, has not the simplicity of that of Williams.

* * *

Bibliographic Bulletin.—The following are thankfully acknowledged:

The Mechanical Transmission of Surra by Tabanus Striatus, by Mr. Bruin Mitzmain, M.S., Veterinary Entomologist under the direction of Archibald R. Ward, B.S.A., D.V.M., Chief Veterinarian (Bureau of Agriculture, Philippine Islands).

Veterinary Notes. December, 1913. Parke, Davis & Co.

Report on Epizootic Abortion in Sheep, Part III, Abortion, with appendix to Part III by Sir J. McFadyean, M.R.C.V.S., M.B., C.M., B.Sc., L.L.D., and Sir Stewart Stockman, M.R.C.V.S.

Hog Cholera, Farmers Bulletin, Dept. Agriculture of Tennessee, George R. White, M.D., D.V.S., State Veterinarian.

Agricultural Journal, South Africa, Nov., 1913.

Bulletin of the Dept. of Agriculture No. 1. *Medical Milk Commissions and Certified Milk,* by Ernest Kelley.

* * *

P. S.—In the February Review, just received, on page 657, there is a letter from Sir John McFadyean to the *London Times*

referring to a statement made at the London Medical Congress by Prof. Harvey Cushing, of Harvard University (I believe), in relation to American veterinary surgeons.

About the time that this statement found its way in English veterinary papers, I felt it my duty to call the attention of my American confrères to it, and to that end mailed in my chronicle for December, 1913, remarks upon it.

By some way or another these did not find their way to our American office. (?) But I do not wish it to be supposed that *I* should have overlooked and neglected my obligations towards the American profession and ignore the ridiculous and gross error of the American surgeon. A. L.

WHAT THE ARMY AND NAVY JOURNAL DOES FOR THE MILITARY VETERINARIANS AND WHAT WE HOLD IT SHOULD DO.

"You never can tell, sir, you never can tell."—Repeated with frequency by the waiter in Bernard Shaw's drama, "*You Never Can Tell.*"

With the equanimity and calm demeanor of a very dignified newspaper, *The Army and Navy Journal* takes pains to correct us at one point in what we said in our editorial on the Army Veterinary Service Bill (H. R. 4541 in the House and S. 4331 in the Senate) in our February issue. In its edition of February 21st it says:

> We would suggest to the AMERICAN VETERINARY REVIEW that a more careful reading of the *Army and Navy Journal* would have saved it from the mistake of saying of this paper: "It has always published the news of the transfers from one regiment to another, from one part of the country to another, from one detail to another, of every commissioned and non-commissioned officer mentioned in Army orders; but never so much as a word came out on orders for veterinarians." The same rule governs our publication of orders relating to veterinarians as of other officers, and whenever we receive an order relative to the change of station or transfer of a veterinarian we publish it under the head of the organization to which he is attached.—*Army and Navy Journal, February* 21, 1914.

The correction stands; for, on looking over its news of the regiments, we find that the *Journal* is right. In this one point we were mistaken, and, acknowledging our error, with uncov-

ered head we may hope to bow ourselves into the good graces of the *Journal* again, conservative a newspaper as it is.

However, the quotation printed above, taken from *The Army and Navy Journal,* is noteworthy not so much for what it says as for what it leaves unsaid. Sir Robert Clive, winner of the battle of Plassey, who subdued a large portion of India and brought it under the British crown, was, late in his career, arraigned before Parliament for supposed malfeasance in office, in that it was believed he had plundered the nabobs. Macaulay states that in the midst of the trial, he said, concerning the restraint he placed upon himself at times when he might have enriched himself, "Sirs, when I think of this abnegation, I am astonished at my own moderation." The writer of the note quoted from *The Army and Navy Journal,* when he had finished it, must, from the restraint he placed upon himself, have had the same feeling as Sir Robert Clive. The silence of that note speaks volumes. We can take it for granted that *The Army and Navy Journal* found nothing else to correct in our editorial, else it would have done so. This perhaps was not born of charity; for this service newspaper can speak with trumpet tones when it is in the humor.

Is the *Journal* aware that inadvertently it paid us a great compliment, for, if we are not mistaken, and we wish it to correct us if we are wrong, the note quoted contains the first reference by name to the American Veterinary Review, or to any other veterinary magazine, American or foreign, that ever appeared in its columns? We challenge the *Journal* to look over its files from the Civil War days or thereafter until the present and see if it can find a single reference to an American veterinary magazine in all those years. There may be smattering reference to veterinary bills in Congress; but has there ever appeared in all its tomes an article, short or long, in which there was a valiant exposition of the need for improvement of the veterinary service of the army? This service newspaper is proud of its championship in its editorial columns of every good and worthy military cause, of everything which would look towards improvement of

any part of the army service. It has stood as staunchly for the enlisted man as for the commissioned officer. But where, oh where, in any editorial, short or long, has it espoused the cause of the army veterinarian? The reason is not that he is too insignificant; because the *Journal* has devoted yards of space to more humble men than he. Is it because the army veterinarian has been forgotten? Not at all. The *Journal* is an authority on the branches, branchlets and twigs of the military organization and knows something about the army veterinarian and the part he plays in the military scheme, and that is why it recently took us to task.

The reason is, in its note it did not deny it, that the *Journal* has been studying the legislative colors and knows pretty well how the tints are being mixed in the legislative halls for military "bills in Congress." If, forsooth, it thought it said too much in what we quoted from its columns in our February article, it makes amends now by saying little that we can quote for our direct helpfulness. Is this because some knowing one has said to it: "See what you have done. Do not encourage the veterinary service. You see how you are quoted and used when by chance you refer to it." If this is the case we may expect the good and discreet army newspaper to relapse into its whilom silence. We can have our last word at any rate, even if the *Journal* says no more now, and we will inform it that, should H. R. 4541 or S. 4331 pass, it will give space in short articles, mayhap in editorials to the army veterinary service, not in the well-packed columns to the rear, but well forward in the *Journal*, there may appear articles (speak it now with bated breath) on veterinary officers and their work.

Now it is our duty, as we have been corrected, to likewise correct in turn. In the note quoted in the beginning of this editorial the army service newspaper, in speaking of the place where it publishes army orders concerning detailing regimental personnel, says, "The same rule governs our publication of orders relating to veterinarians *as of other officers.*" This reminds us of what the genial Oliver Wendell Holmes said of "My Country

'Tis of Thee," that the song and his Harvard classmate, Smith, its author, became famous from the use of the "My," which made the song personal to the American people. In this case it is the "other" that would make this part of the quotation apply to the army veterinarian were it not that the "other" is horribly untrue, because the army veterinarians are not yet officers. *The Army and Navy Journal* is excusable for this *lapsus linguae,* and we may credit this "other" to its sense of courtesy. When it is not Homerically nodding, the service newspaper knows that the army veterinarian at best, if success does not fail him this time, congressionally is in process of becoming an officer.

We will close our quarrel with our New York neighbor, the army service newspaper, if it will write an editorial of twenty lines in which it will point out the truthfulness or the untruthfulness of the statements made by Mr. Hay in favor of the veterinary profession on page six of Report 239 of the present Congress, or in the letter of the surgeon general of the army in the same report, pages seven and eight.

G. S.

THE HOUSE COMMITTEE ON MILITARY AFFAIRS IN CONGRESS AGAIN COMPLIMENTS THE VETERINARY PROFESSION.

The Committee on Military Affairs of the House of Representatives in its Report (No. 239, 63d Congress, 2d Session, page six) again compliments the profession and says:

"It is thought that it will greatly improve the service to give the rank provided in this bill, and in that way much money will be saved by virtue of increased efficiency in this service. The veterinary surgeons of this country are a body of highly trained and intelligent men, who have made and are making great strides toward progress in their profession; and it is not reasonable to expect that the Government can secure the best talent of the profession unless some fitting and substantial recognition is given to it.

"The War Department has given its approval to this bill. The Secretary of War recommends that the veterinarians be placed in the Medical Corps. This bill is so drawn that the Secretary of War will be able to place these

officers under the control of any department which he may deem best for the interests and efficiency of this service."

* * * * * * *

The whole profession is more interested in the Army Veterinary Service Bill now than ever, in view of the fact that it is an administration measure. The House Military Committee Report sets this forth fully, as is seen in the following quotations:

CONSOLIDATION OF THE VETERINARY SERVICE OF THE ARMY.

WAR DEPARTMENT,
Washington, June 28, 1913.

SIR—I have the honor to return herewith H. R. 4541, a bill to consolidate the veterinary service, United States Army, and increase its efficiency, and to invite attention to the memoranda of the Chief of the Quartermaster Corps and the Surgeon General.

I am of the opinion that the interests of the service would be served best by the attachment of this corps to the Medical Department, as is the Dental Corps, for the reasons set forth by the Surgeon General.

Very respectfully,
LINDLEY M. GARRISON,
Secretary of War.

The CHAIRMAN COMMITTEE ON MILITARY AFFAIRS,
House of Representatives.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF THE QUARTERMASTER CORPS,
Washington, June 26, 1913.

Memorandum for the Chief of Staff.

1. Referring to your memorandum of June 13, requesting remark on H. R. 4541, a bill to consolidate the veterinary service, United States Army, and increase its efficiency and inviting special attention to the recommendation of the Surgeon General, I desire to advise you that this matter has received careful consideration.

2. The bill H. R. 4541 is satisfactory to this office, except two more veterinarians are required for the Quartermaster Corps than those which will be authorized by section 1, and it is recommended that the word "seventeen" be substituted for "fifteen," line 7, page 1, and that the word "sixty-four" be substituted for "sixty-two," line 9, page 1.

3. While it is believed that the duty of veterinarian is more closely connected with the Quartermaster Corps than the Medical Department, there will be no objection offered on the part of this office to the veterinary corps being made part of the Medical Department, provided that such number of veterinarians as may be required for performance of duties in the Quartermaster Corps will be detailed to that corps and made subject to the supervision and control of the Chief of the Quartermaster Corps while serving therein, as are commissioned officers now detailed to duty in the corps.

4. All papers are herewith returned.

J. B. ALESHIRE,
Chief Quartermaster Corps.

War Department,
Office of the Surgeon General,
Washington, June 12, 1913.

Memorandum for the Chief of Staff.

Subject: Bill H. R. 4541, to consolidate the veterinary service of the Army and increase its efficiency.

Veterinary medicine is a learned profession, with a voluminous periodical and permanent literature of its own. For efficiency, there is the same necessity that the horse doctor should be learned as for the man doctor, and as his patients are not able to speak and describe their symptoms, a greater amount of scientific accuracy and acumen is necessary for a correct diagnosis. The therapeutics and pharmacy of veterinary medicine are largely the same as for the Medical Service, and in Europe, where veterinary medicine has the dignity and standing of a learned profession, it has made valuable contributions to our knowledge of the causation of diseases. It is believed that it cannot be placed on a high standard of efficiency without long-continued application of the same agencies which have raised the Medical Corps of the Army to its present standard. Conspicuous among these is the system of examination for admission to the service and for promotion. Others which may be mentioned are the liberal supply of literature and appliances and a close touch maintained with the progress of the profession in civil life.

It is believed that these things can be accomplished for the veterinary service only by making it a part of the Medical Department and permitting it to share the administrative machinery of the Medical Corps. This would not only conduce to the elevation and efficiency of the veterinary service, but would also be in the interest of economy, as all of its supplies could be most advantageously purchased, cared for, and issued through the machinery of the Medical Department. As regards the administrative question of supplying veterinary surgeons to the Quartermaster Department, it is believed that no difficulty would arise, as the veterinary officers needed for that service could be placed under the orders of the quartermasters at depots, etc., where their services were needed, or ordered to report to the Chief of the Quartermaster Corps for such service and duty as he might desire to assign them. The establishment of the veterinary service as a corps of the Medical Department, like the [illegible]rps and the Army Nurse Corps, is not proposed for the aggrandizeme[illegible] the Medical Department, but because it is believed to be the only way in which that service can be raised to a fitting plane of dignity and efficiency such as it has reached in European countries and in the armies of the great military nations.

For these reasons the draft of the bill submitted by the War Department on January 6, 1913, a copy of which is attached to the General Staff Report No. 8443, herewith, is believed to be much better calculated to increase the efficiency of the sanitary service of the Army than the bill H. R. 4541 herewith.

George H. Torney,
Surgeon General.

The time is getting short, as the present session of Congress will surely close in June, and we urge every man who reads this to use his influence with senators or representatives in Congress to assist in the passage of the Army Veterinary Service Bill. Write them earnestly, persistently, but discreetly, seeking their favor for the bill. There never was a time when the chances for

the passage of the bill were better or as good as now. The War Department is for us. The political powers that be in the House are for us. The leader of the political strength for the government in the Senate, Mr. Kern, is for us. The sub-committee of the Senate, we are firmly impressed, is as fair-minded a body of men as we could wish. Our friends are increasing in numbers daily. Your political friend should be the whole profession's political friend. Write him insistently to do all he can for H. R. 4541 or, if he is a senator, for S. 4331. *Veterinarius victor*—the veterinarian shall be victor!

G. S.

VOLUME FORTY-FIVE.

With the delivery of 1,500 pages of the choicest scientific and practical material during the past year, as a guarantee that our numbers grow better with each issue, we enter upon Volume XLV, with the full confidence and hearty support of the American veterinary profession. We need not waste valuable and much needed space in telling our subscribers what we are going to do for them in the year that we are just entering upon with the April number; but will, in as brief a manner as possible, express our deep appreciation of their continued support, both financial and moral, as expressed by the pouring in of their renewal checks and kind words of appreciation of our efforts, which accompany them; both of which are essentials in the continuance of the highest type of return service. It is *your* magazine, use it to exchange your professional thoughts, broaden your professional knowledge and increase your professional value to each other and to your *clientèle*.

AMONGST NEXT MONTH'S LEADERS: *Hog Cholera and the Production and Use of Hog Cholera Serum;* by D. E. Salmon, former Chief U. S. Bureau of Animal Industry.

ORIGINAL ARTICLES.

THE RELATION OF VACCINE THERAPY TO VETERINARY PRACTICE.*

By R. E. Spline, M.D., New York.

A careful consideration of vaccine therapy reveals the fact that it involves almost all of the great biologic principles. These may, however, be grouped under two headings—infection and immunity. Neither of these fields has any well-defined limits. In the elaboration of research in them, one is led into still greater problems of biology, such as laws of inheritance, specie characteristics, mutation of species and, upon the side of the infected host, there are almost all of the great problems of physiology and pathology.

It was Pasteur who first demonstrated that material progress in the treatment and prevention of the infectious diseases, could only be achieved by the recognition of the fact that the production of active resistance to an infecting organism, on the part of a susceptible animal, can be brought about by the introduction of the infecting agent into the animal body.

Nature of Infection.—Not only must the infecting organism come in contact with the body tissues, in order to produce disease, but it must be able to grow and multiply, and overcome the resistance of the body. The symptoms and signs of infections do not appear as soon as the pathogenic organism enters the body. The interval between the invasion of the disease and the appearance of symptoms is known as the incubation period and varies according to the biologic characteristics of the infecting organism; and it is also influenced by the number and virulence of the organisms, the location of the portal of entry, and the individual susceptibility of the host. The symptoms produced by the

*Read by invitation before the Wisconsin State Veterinary Society at Milwaukee, February 10, 1914.

From the Lederle Antitoxin Laboratories, New York.

organism will vary as the organism acts locally or generally. In local infections, the most marked disturbance occurs at the portal of entry, while in general infections, the reaction manifests itself in the whole or a large part of the body. The appearance of general symptoms varies greatly with the rapidity of production and absorption of toxic products. Many infectious diseases are self-limited in their course; recovery taking place after a rather definite period of time has elapsed. When this is not the case, the infection becomes chronic and gives rise to various conditions, depending on the species of the organism, the part of the body involved, etc.

The invasion of the body by infective micro-organisms may best be conceived as a contest between the invading organisms on the one side and the resisting tissues of the animal body on the other. In other words, disease is simply a war between the tissue cells and the bacteria. If the tissues are not of sufficient vigor to destroy the invading bacteria, or to render inert their poisons, the bacteria are victorious and infection results. On the other hand, if disease does not occur, the tissues are victorious and are then said to be *resistant* or *immune* to this particular infection.

There are two factors which influence susceptibility to disease: (1) Intrinsic factors, which depend upon the biologic properties of the infecting bacteria, including their virulence and the kind of poison which they produce; (2) Extrinsic factors or environmental factors, indicated by the age, breed, food, temperature, exposure, etc., of the host—that is, the animal. There is a certain balance or equilibrium always present, depending upon these two factors. The toxemia of most infectious diseases is now regarded as an anaphylactic manifestation, which will be discussed later.

Infectious diseases may be divided into two distinct types: (1) *Toxemias*, caused by specific toxins of bacteria, such as the diphtheria and tetanus toxins; (2) *Bacteriemias*, produced by the splitting up of bacterial protoplasm or by a breaking down of the protein poisons of bacteria. In bacteriemias, the degree of infection is dependent upon the manner and rapidity with which the bacteria or their contained protein poisons are split up.

Offensive Forces of Invading Micro-organisms.—The question naturally arises, why does not every infection become generalized and lead to the destruction of the host? Evidently this must depend upon one of two factors or an interaction between the two, namely, the nature of the micro-organism and the resistance which the host offers. Those forces which are at the disposal of the invading organism, and, by virtue of which it strives to maintain itself in its new environment, may be termed its aggressive or offensive forces in contradistinction to the defensive forces of the host.

Virulence.—Clinically, we have long been in the habit of ascribing the varying severity, observed in the different cases of infectious diseases, to differences in the virulence of the organisms. In other words, the severity of the clinical picture was regarded as an index of the severity of the infection. This conception of the term is now no longer tenable. The term "virulence," in its modern meaning, has reference essentially to the ability of the organism to multiply in the body of the infected animal; and is virtually synonymous with aggressivity or infectiousness. Therefore, it is erroneous to speak of the virulence of a tetanus bacillus or of a diphtheria bacillus to indicate the severity of a given case. The clinical picture is essentially due to the action of toxins, and one should accordingly speak of the toxicity of the organism. By a particularly virulent infection, we mean an infection during which there is, on the one hand, an active multiplication of organisms and, on the other, a corresponding toxin-formation with the production of a severe clinical picture.

Difference in Virulence.—The virulence of the different groups or strains of bacteria differs considerably, and may be due to certain changes of a morphological or physiological character by which the organism adjusts itself to its new surroundings; or, to some substance secreted by the infecting organism.

Attenuation of Virulence.—The virulence of an organism may be attenuated or decreased in many ways. Attenuation may be brought about (1) by exposure to temperatures unfavorable

to the growth of the organism; (2) by prolonged exposure to the air; (3) by exposure to sunlight; (4) by increased atmospheric pressure; (5) by the electric current; (6) by certain chemicals, such as glycerin, carbolic acid, alcohol, etc., being careful to employ concentrations which will not actually kill the organisms; (7) by growing the organism in the presence of others which tend to crowd out the one under consideration; (8) by growth in immune serum; (9) by passage through animals. By animal passage, the virulence of the organism is usually specifically *increased* for the species of animal employed; while it either remains unchanged for other animals or is associated with an actual decrease in virulence for other species of animals. The practical application of this principle was used by Pasteur, in immunizing against rabies, by passing the virus through rabbits; thereby increasing its virulence for rabbits but decreasing it for man.

Bacterial Poisons.—All of the infectious diseases, of which the infecting agent is known, are due to toxic substances derived from the offending parasite. Regarding the nature of the toxic agents which are responsible for the symptom-complex of the infectious diseases and the mechanism of their action, our knowledge is yet very meager. But three groups of substances are now recognized, namely, toxins, endotoxins and bacterial proteins.

Toxins.—A toxin is a product of the anabolic activity of an organism, and its production is specific; for example, only one organism is known to produce tetanus toxin. It is now a recognized fact that these toxins are actually responsible for the clinical picture of the corresponding diseases.

Endotoxins.—Endotoxins are not secreted by the living organism, but are only set free after the death and disintegration of the bacteria.

Bacterial Proteins.—The bacterial proteins seem to have the same properties in all bacteria; not causing any specific infection, but all alike causing fever, inflammation and suppuration. They are not, in themselves, toxic to the host. They have, however,

gained new importance, since it has been demonstrated that the introduction of foreign proteins of whatever kind leads not only to increased resistance or immunity against such proteins, but may also induce a state of hypersensitiveness or anaphylaxis such that a subsequent injection of the proteins, after a certain interval, may produce serious symptoms and even death. The host develops a capacity to break down the bacterial proteins into secondary products, which are probably toxic elements and which cause the phenomenon of disease.

Defensive Forces of the Host.—We have said nothing as yet of the mechanism by which the host defends itself against infections, and the action of those poisonous products which are so largely responsible for the clinical picture of disease. We may distinguish between those forces which are at the disposal of the animal body at the moment of infection and those which develop only in the course of the infection and because of the infection. The former comprise the phagocytic forces of the body, as well as the normal bactericidal power of the blood; while the second class includes the various antibodies or substances which are liberated from the cells in consequence of the introduction into the circulation of foreign cells or cell-products.

Phagocytic Forces.—In considering the phagocytic forces, we shall here merely mention that the phagocytes and opsonins are involved and will reserve the discussion until we come to consider the mechanism of immunity.

Bactericidal Substances of Normal Blood.—That normal blood-serum possesses active bactericidal properties has been demonstrated by Fodor, Nuttall and Buchner. The latter ascribed the bactericidal action of blood-serum to substances which he assumed to be of the nature of ferments and which he designated as "alexins." Subsequent studies which are intimately associated with the names of Ehrlich, Morgenroth, Bordet, Metchnikoff, Neiser and Wechsberg, etc., have shown that the bactericidal action of normal serum is dependent upon the presence of two substances, one of which, now generally spoken of as *amboceptor,* serves as a connecting link between the bacteria and the

second substance, designated as *complement.* The complement itself is not capable of combining with the bacteria, whereas the amboceptor is readily anchored to the organisms. Much of our knowledge of the mechanism which is involved in the interaction between bacteria, amboceptor, and the complement has been obtained from the study of the closely corresponding hemolytic properties which certain sera possess for red corpuscles of animals of alien species.

An important, practical fact is that the amboceptor normally present in blood-serum and which is called *natural amboceptor* is not as specific nor as stable as the amboceptor which is produced by inoculation of foreign cells and which is called *immune amboceptor.* As a result of infection or artificial immunization, the amboceptor content of the blood-serum is materially increased, while the complement remains the same. Recent research regarding the nature of amboceptor and complement tends to show that complement is probably a lipoid-albumin product, while amboceptor is of the nature of a ferment.

The principle involved in the interaction between bacteria, amboceptor and complement receives a practical application in the complement fixation test, which was originally devised by Bordet and Gengou and made use of by Wassermann in the now well-known Wassermann test in human medicine, and which is frequently used as a method for diagnosing glanders in veterinary medicine.

Antibodies.—An animal organism invariably responds to the parenteral introduction (that is, the introduction by other channels than through the gastro-intestinal tract), of foreign cells or products of foreign cells and produces substances which, in a general way, tend to destroy those which indirectly gave rise to their formation. The reaction products which are formed in the body of the treated animal are conjointly spoken of as "antibodies," and the substances whose introduction from without gives rise to their formation are termed "antigens." The discovery of these substances and their bearing upon the subject of immunity has opened up an enormous field for fruitful research.

not only in the domain of medical science, but in that of general biology as well. Among these substances may be mentioned *antitoxins* (Behring and Kitasato) which neutralize the harmful effect of bacterial toxins; *bacteriolysins* (Pfeiffer) which possess the property of causing dissolution of the corresponding organisms; *agglutinins* (Gruber and Durham) which cause the clumping or agglutination of bacteria, and the cessation of their motility; *precipitins* (Kraus) which, when brought together with the clear filtrates of bouillon cultures, will cause a precipitate to collect at the bottom of the tube. In the form of the "biological blood test," the principle of precipitins is now generally utilized for the purpose of determining the origin of blood stains and, upon the same basis, it has been possible to establish zoological relationship between different animals. There still remain other groups of antibodies which are variously known as cytolysins, antiferments, antilypoids, albuminolysins, etc.

Types of Immunity.—Immunity may be defined as nonsusceptibility to disease or, as the ability to resist the action of the causes of disease. The body may be immune because of inherent properties or, because it has acquired immunity. Immunity due to inherent properties is called *natural immunity,* while the immunity acquired during life is called *acquired immunity.*

Natural Immunity.—Natural immunity is demonstrated by the nonsusceptibility of certain animals to the action of some of the micro-organisms causing disease in man. It is an immunity of species, race and, at times, of family. Generally speaking, the natural susceptibility to infection by micro-organisms differs with the different classes of animals, with different genera, with different species, and even with different varieties and individuals.

Acquired Immunity.—Specific acquired immunity results only after a pathological condition exists or has existed. In these cases, the individual becomes immune because he has survived a natural course of the disease, as occurs after an attack of scarlet fever; because he has gone through a modified form of the disease, as obtains in vaccination against smallpox; or because he received substances prepared by some other individual

or animal that has gone through a natural or modified course of the disease. Two types of acquired immunity are recognized and are referred to as *active* and *passive*.

Active Immunity.—An individual acquires an active immunity to certain micro-organisms when he himself has survived a natural or modified course of the disease produced by infection with this or that particular organism. In this case, the individual produces his own immunity either because he has had the disease naturally or because it has been intentionally and experimentally produced. Experimental, artificial or intentional active immunization is usually called *vaccination,* and generally produces in the individual a mild form of the symptoms usually found in the infection. Active immunization, protective and curative, is most frequently attempted with injections of killed bacteria, although toxins and living organisms are used to immunize against certain infectious diseases. Attenuated or killed organisms prepared for immunization are referred to as vaccines.

Passive Immunity.—Acquired passive immunity takes place as the result of the introduction of immunizing substances that have been prepared by actively immunized individuals or animals. This is usually conferred by the injection of blood-serum from immunized animals. There are two classes of immunizing substances. Those acting on bacteria are said to be antibacterial; while those acting on toxins are called antitoxic.

Mechanism of Immunity.—Various explanations of the causes and processes of natural acquired immunity have been attempted. We shall here speak of three.

Phagocytic Theory of Metchnikoff—In 1884, Metchnikoff published the first of a series of observations upon the behavior of certain cells of the lower animals toward insoluble particles that may be present in the tissues of these animals. The outcome of these investigations was the establishment of his well-known doctrine of phagocytosis, the principle of which is that the wandering cells of the animal organism, the leucocytes, possess the property of taking up and rendering inert and digesting micro-organisms which they may encounter in the disease.

Metchnikoff believes that in this way immunity from infection may in many cases be explained. He believed that immunity was essentially a matter between the invading bacteria and the leucocytes.

The Side-Chain Theory of Ehrlich.—The theory advanced by Ehrlich in 1897 stands out most prominently in attempting to explain the phenomenon of immunity. Ehrlich conceives the individual cell to be a complex molecule, comprising a primary central nucleus to which are attached its secondary atom-groups, side-chains, or receptors. Their principal function is to convert foreign substances into food, which must enter into chemical combination with the central part of the cell, so as to be assimilated. The receptors have, however, a great variety of functions, so that at times they bind the cell to substances that are not foods but actually cell-poisons. Injury to one or more of these receptors, caused by combining with a poison, results in disturbance of the cell-equilibrium, and consequent effort of the surrounding receptors at compensating repair. With this liberation of bioplastic energy, more plastic material is generated than is necessary for the repair of the injury. The excess of this material, being disengaged from the parent-cell, is thrown into the circulation where it combines, according to Ehrlich, with the poisons, forming antitoxin compounds, and can, therefore, be reasonably regarded as the antitoxic material of artificially immune animals.

Opsonic Theory of Wright.—In 1903, Wright and Douglas pointed out that there are certain substances in sera which so affect bacteria that they are more easily taken up and disposed of by the leucocytes. These substances they termed *opsonins*. Wright and Douglas decided that the amount of opsonins in sera is variable; that these substances are of importance in infection, and can be increased or decreased by injection of killed cultures of bacteria. They express the amount of opsonins present in serum in terms of the opsonic index of the patient's blood to the phagocytic index of serum from normal individuals.

Anaphylaxis.—If a guinea-pig is injected with normal horse serum and an interval of 10 to 12 days allowed to elapse,

it will be noted that the second injection is followed by most alarming symptoms, including intense dyspnea and fall of temperature, which frequently end in death. The phenomenon was first described by Auer and Lewis, and is attributed by these investigators to *spasm of the smallest bronchioles,* which virtually causes the suffocation of the animal. *Some toxic substance is set free, which acts upon the plain muscle fiber of the body. In the lungs, it causes spasm of the muscular coat of the bronchi so that air cannot pass out or in, and the animal dies of asphyxiation.*

Corresponding symptoms occur in other animals and may follow the introduction of almost any foreign albumin by parenteral channels. The first injection sensitizes the animal to subsequent injections and, during the interaction between the antibody and its antigen at the time of the second injection, highly poisonous intermediary products are formed to which the toxic symptoms are in turn due. As the injected animal has evidently become more sensitive to the action of the foreign albumin than it was before the first injection, Richet suggested the term "anaphylaxis" to express this condition of hypersusceptibility. This term has now been generally accepted and the more or less threatening symptoms that follow the second injection are spoken of as the "anaphylactic shock." Stated in the simplest terms, anaphylaxis may be described thus: The protein by-products are produced or set free in toxic quantities, while in the normal animal the process proceeds so slowly that no evident intoxication may result.

Anaphylaxis and Immunity.—The relation between antibacterial immunity and anaphylactic intoxication remains essentially the same as outlined by Pfeiffer. While he limited himself to the conception of performed endotoxins, under the newer views, we would consider poisonous substances of bacterial bodies as being intermediary digestion products, and as arising also in part from changes in harmless proteins. There is no contradiction between immunity and anaphylaxis, which is a form of antibody reaction, and, so to speak, an incident in the course of immunization.

Active Immunization.—In active immunization, the principal aim is to develop specific antibodies which are of importance in combating and overcoming the infecting organisms and their products. The discovery that active immunity can be produced, in many instances without the production of any disease, through the use of organisms whose virulence has been artificially diminished, or even with organisms that are dead, is one of the greatest triumphs of modern medicine as exemplified in vaccine therapy. Active immunization, to be applicable generally, must be such that it is beneficial if induced after infection has occurred. Pasteur was successful in actively immunizing against rabies, if the immunization was begun before the symptoms and signs of the disease appeared.

The discovery of the possibility of producing immunity artificially we owe to Jenner, who first showed that by vaccinating individuals with smallpox virus, which had been attenuated by passage through cattle, protection against the disease could be secured. Although the causative agent of smallpox was unknown, Pasteur subsequently recognized that the principle of vaccination lies in the production of the disease in an attenuated form. The thought, therefore, suggested itself to him that the same principle might be adapted to the prevention of bacterial diseases also, and by experimentation in this direction he laid the foundation of our modern vaccine therapy, which finds its most immediate expression, so far as human pathology is concerned, in the preventive treatment of rabies and in the prophylactic vaccines against typhoid fever.

Passive Immunization.—When antibodies, that have been produced in the blood of an actively immunized animal, are introduced into the circulation of another animal, a condition of passive immunity is established. Such a condition may be induced by the use of either antitoxic serum—which neutralizes the bacterial toxin and renders it inert, as illustrated in the use of Tetanus Antitoxin—or antibacterial serum, which acts directly upon the invading organisms and renders them inert or destroys them, as in the use of Antistreptococcus Serum.

(*To be concluded in the next issue.*)

MARKET HORSES.

By Carl W. Gay, D.V.M., University of Pennsylvania, Philadelphia, Pa.

The notion seems to have gone abroad that the present administration of affairs agriculturally in New York State is especially interested in horse-breeding. Personally, I never have been on a program where such a large proportion of the allotment was conceded to horses as is done on the present program, and it is all extremely gratifying to one who is interested in this particular line of work, not merely because it gives those of us interested an opportunity to express our views, but for more important reasons.

Prof. Wing has told you that I am more or less in touch with the selling end. I try to keep as well informed as I can, and I admit frankly that the conditions that our dealers complain of most generally are not the fact that there is a dearth of buyers, but the fact that they cannot find the horses to sell. Now I believe there is one very good reason for that. I believe that the activities of the smooth and very competent motor salesmen have created a condition where there is a lack of confidence in the horse business on the purchasing end, and I believe there are a lot of farmers who have quit breeding horses on that account. And I think when a great power like an association of this sort, in a great State, puts its stamp of approval on the horse business, it cannot help have a far-reaching influence in restoring, to a certain extent, this mistaken confidence.

I would like to emphasize the topic, "Market." There is a great difference between horses and producing market horses. It

Note.—Through the courtesy of Commissioner Calvin J. Huson, of the New York State Department of Agriculture, President of the New York State Breeders' Association, we were furnished with the stenographic report of an extemporaneous address given before that organization at its recent meeting in Rochester, by Carl W. Gay, D. V. M., B. S. A., author of Productive Horse Husbandry, Professor of Animal Industry in the School of Veterinary Medicine, University of Pennsylvania, and Director of Horse Breeding, State Live Stock Sanitary Board, Commonwealth of Pennsylvania, for publication; the Commissioner explaining that "this copy had *not* been submitted to Dr. Gay for correction." We read it through with the very great pleasure that we feel sure it will afford *all* of our readers, and concluded it did not require any author's corrections; and trust that Prof. Gay will not censure us for publishing it without his having read it. It is brim-full of good arguments and common sense, and suggests an immense fund of information on zoötechny by the speaker.—[Ed.]

is the latter topic I want to discuss. In the first place, what is a market horse? You know Ezra Kendall's statement, "Pigs is Pigs." A good many who raise horses seem to be laboring under the impression that horses is horses. That isn't a fact. A buyer was never as discriminating as he is to-day. On the other hand I believe I am safe in saying there never was a time when the first-class horse sold for more than it does to-day. Most men do not appreciate the fact that there is a distinction between a market horse and any kind of horse. What is a market horse? The very definition of the term "market" makes that point clear. The original market, as you know, was a medium for commodities. And this term "medium" introduces the idea of two parties, one on one side of the medium and the other on the other side, between whom the exchange takes place. They are the producer on the one hand and the seller on the other.

I would like to emphasize especially the importance of the consumer ruling the types of horses for which there is a market. So I say any horse that has a market is a market horse. In other words, it takes two parties to consummate a sale. It doesn't make any difference how highly you value your horse; you have to find somebody else who thinks as you do. A market horse is a horse that has a buyer.

The man who is going to sell market horses must keep himself informed. A man cannot keep himself back and not be informed, for the simple reason that the market conditions are continually changing. I have already tried to show you that they have never been ruled by the consumer—unless the producer keeps in touch with the consumer's demands, he cannot meet them when he gets to market. The producer of market horses should follow up the market.

The question naturally arises, "What sort of horses shall we produce to-day to meet the demand?" I have no patience with the man who thinks that the motor car has put the horse out of business on the one hand, and I have no faith in the statement that the motor has nothing to do with the horse business. It has, and you must take the motor into consideration. The thing for

you to do is to study the proposition and eliminate those with which the competition is most keen. If you follow the market conditions you will find that the commercial draft horse is as good a proposition to-day as he ever was, and so far as we can find out from the men who are using these horses, there is nothing to indicate that this state of affairs won't continue to exist.

I was in a stable just a week ago yesterday, of a Philadelphia concern that works 107 head of horses—the biggest and best draft horses they can buy. They had just returned from Ohio with a carload of 22 head. This concern is working six big five-ton autos. They claim they will never buy another one. They claim it costs them 12 cents a hundred to deliver by truck; it costs 6 cents to deliver by horse. They can make their deliveries, running out 20 or 30 miles, by motors; but for the about-town deliveries they find there is nothing to it. And I could take you down on through the different lines of delivery service, and if we lay aside the matter of vogue—the fact that some people are so distinctive as to demand that their goods shall be delivered by auto—if we can eliminate those people, you will find that in a short radius of three or four miles the efficiency of the horse is far ahead of the motor. There is no reason why these conditions should be reversed. So I say I think it is a good proposition for anyone to breed.

I sometimes take the position, not exactly at variance but a little different from the position of men who are talking horse. Nearly all of the college men have been pushing the draft horse hard. I don't want to retract one bit from the draft horse. I do believe this, that if we make the draft horse the only proposition to the exclusion of the other types, we are not only doing an injustice to the other types themselves, but we are standing in our own light. There are a number of very good reasons why the draft horse is every man's horse—why the average farmer will do far better to bred the draft horse than any other kind of horse. On the other hand, it is a little derogatory to the farmer to say that every farmer is the average farmer. We might say that day labor is the average of all our public employment. It

seems to me there is a very parallel condition in our horse business. I think there are a lot of farmers in this country who are capable of raising something. There is no question but that he is a simpler proposition. Like the hog, he will turn the money with a degree of certainty. But when I see the prices that our Philadelphia buyers are paying the French farmers, I am convinced that if I had a buyer I could raise them at a profit. I know very well there is a good margin of profit left for those Kentucky farmers.

I would not exclude, either, the Virginia type. The saddle horse busines was never better than it is at the present day. They tell me the bridle paths of Central Park (New York) are swarming with horses every morning. And there is no reason why there should be any let-up in the demand for saddle horses. As a matter of fact, the motors have contributed to it. The very fact that the motor serves us so conveniently makes getting about so easy and necessitates so little actual exercise is accountable for the fact that so many men have been forced to take exercise, and that exercise is usually in the line of horseback riding.

I do not think, further, we should eliminate the harness horse. Perhaps we should grade down to him. The majority of people buying saddle horses to-day require those that go well in harness. So the combination horse is a good live business proposition.

Then we come down to the show horse. I happened to be down-town yesterday morning, and in one block in Philadelphia I counted three private broughams, a victoria, and a nicely turned-out station wagon, a thing I have not done in quite a while. I have heard a number of men say that there is some sign of a slight come-back in the harness horse. It is generally reported there were more horses in Newport last year than in six or seven years. Perhaps it may not mean very much to us, but nevertheless there is a place to read the signs of the times in horses of that particular type. I was told by a dealer that the sale of harness horses in Boston at the present time is very good. So I don't believe we ought to eliminate the harness horse.

I do think the poorest proposition is the no-account road

horse. His place is so much better taken by the car that unless you have a road horse of the highest type he should not be considered. I have seen them sold very much below what it cost to produce them.

We are safe in saying that as a business proposition we may bank on the draft horse and saddle horse, and then come down to the harness horse for a place.

I may say my business position is unique in that matter. I like to get next to him. I believe thoroughly that the best thing for the inside of a man is the outside of a horse. When Lieutenant Shiverick addressed us this morning and spoke of the hunter, I confess those of us who had our hearts in the right place felt them jump up a few paces in their beats. The horse is such a factor in our sports and pastimes that I don't believe he will ever be eliminated by competion with a motor car.

If these are the horses then that we are to purchase, the question arises, "How shall they be most economically placed on the market?" I think the situation can be summed up in two words, "Breed" and "Feed." I insist upon "Breed" coming first. The breeder furnishes us the raw material; the feeder is the man who furnishes this in rounded shape. You know very well there would be no object, for instance, for your buying gasolene for a 60 horse-power motor if that car's capacity was limited to 40. It would be just as useless to put good feed into a poor horse, that is, to put feed capable of being put in a better horse. Therefore I think that the breeding proposition should always precede the feeding. Dr. Davenport has given us a definition of feeding in his book; Luther Burbank has given us a definition—both of which are very good. But there is a little definition I am going to give you, and it is simply this (I have never submitted this to Dean Davenport, but it seems to me that it can be summed up in this statement): Breeding is the regulation of the progeny through the control of the ancestry, by selection of the parentage. Now I will tell you why I like that definition, and that is because it introduces three factors—the ancestors that go before, the parents which are, that is now, and the progeny which follow

after. Now I emphasize the three because I think breeders are too prone to eliminate the first-named group. That is, we make our beginning here with this sire and dam and we expect to regulate what shall come after. The reason we have got to consider the first-named group, the ancestors, is because the transmission of character is not from the parents to the offspring, but it is from the ancestors, through the parents, to the offspring. There is rather a homely illustration that occurs to me. You are all familiar with the old-fashioned hour-glass. You know that you start the sand in the upper half and in time it all gravitates down into the lower half, and you know that every grain in the upper half will eventually get into the lower half, and you also know that you cannot introduce a grain of sand that was not in the upper half. Label your upper half "Ancestry," the middle part "Parents" and the lower half "Progeny," and you have the proposition as I see it. The characters that are going to be forthcoming in the horses that we are producing are the characters that were in the ancestors from whom the parents came.

Furthermore, here is another principle: No individual manifests in his physical make-up all the inherent qualities which he inherits from his race. On the other hand he may transmit to his offspring any character that he inherits from his race, whether he manifest it in his own physical make-up or not.

Now, what is too often the case? Two men start in the same business and they start out to raise foals. One man perhaps has only the price of a mare and a good stud fee, and he is very careful in his selections, and he mates that mare with the best stallion he can afford to pay the fee of. Now, what are the results? He starts a constructive proposition. Ten years hence and he has a very constructive proposition. You go to the other man, and what do you find? He is out of it, and why? Because the one man appreciated the fact that he had to go back of the individual to which he mated his mare; the other man supposed that if he bought a grand champion stallion and a grand champion mare he could not help but have a grand champion foal. It may be that this grand champion stallion may be the quintessence of merit

of his whole race, so far as first-class capabilities are concerned, and yet he possesses the capability of transmitting characters that he has inherited from the race which are anything but meritorious. And it just happens that in the colts that he sires those latter characters are the ones that will be manifested, rather than the first-mentioned characters. While the other man, perhaps, has mated his horse with a stallion that has not the same show record, because he is an inferior individual; but that man who made the mating has studied his ancestry—he knows that he cannot produce anything but good foals.

Now, gentlemen, the actual application of that proposition is your pure-bred sire. How in the world (I do not care how many ribbons he has won or how many races he has run) can he expect to be a breeding power unto himself when we know that the actual hereditary force of that individual is derived from his ancestors? And by Cotton's law we know that there is a fractional contribution from each ancestor that will determine the character in the progeny. He is an unknown proposition, and it is a mighty expensive experiment to try him out on the mere chance that he may happen to be a good breeder.

Now on the other hand we hear a lot about pedigreed and registered horses. Now, what is pedigree? It is merely a record of the ancestry. Is it sufficient? Absolutely no. It is not the pedigree that suffices; it is the character of the ancestry. Now to be sure it is more to our advantage to find the records against the individual than to find no record at all, because then we are forewarned and because we can go away from it. But unless the pedigree itself is a record of merit, the mere fact that the animal possesses the pedigree is no reason why he should be patronized. Now I say that as a word of warning. We hear a whole lot about the pedigree business. I am no advocate of the grade stallion; on the other hand it is pretty hard to eliminate a grade stallion from a community where he has been siring the colts, on the mere fact that he has not a registration in the association.

Now you have got to breeding your pure-breds to a standard where the poorest pure-bred is better than the best grade. Don't

be misled by this mere matter of register; but go to that record and see what it shows, and unless it shows merit don't have any more to do with him than you would with a horse that had no pedigree at all.

Perhaps that is enough in this matter of breeding. There is one other point that is always important, and that is what we know as preponderancy. Preponderancy is the relative influence of two individuals in determining the character of the offspring. You know, for instance, the offspring will follow the sire—sometimes the sire in certain characters, and sometimes the dam. Or the reverse condition may be true. You breed a mare to one stallion and you will find that she always has colts marked after that stallion. There is a difference in the relative influence of the sire and dam in determining the character of the offspring. Now what makes for preponderancy? In the first place, pure breeding. Purity of breeding eliminates all undesirable characters. Every time you have purity in the ancestor—an individual of the character you desire in the progeny—you are re-enforcing the character which will manifest itself in the progeny. A good pedigree is really a good insurance policy that that character has predominated in the ancestor and is bound to predominate in the progeny.

I don't want to introduce the matter of close breeding here, by using the same individuals as great a number of times as possible. What we want is uniformity in the ancestry. There are no two separate individuals as near alike as the same individual twice; therefore, the more times you can use the same individual the more you purify and intensify and increase this preponderancy. But we find preponderancy is an individual proposition. Two full brothers will have distinctly relative breeding powers. It is an individual personal equation. Sometimes it is very hard to account for, but we do know this, that the individual who has the impressive character, that has a high degree of individuality, that stands up, is likewise an impressive breeder, an impressive personality, which usually contributes to an impressive sire.

Now the matter of feeding. I said we would not think of

taking a low-power automobile, for instance, and feeding it gas enough for higher power. On the other hand we would not think of buying a 60-horse power automobile and then only feed it gas enough to make 40-horse power. It is essential we should keep feeding abreast with the breeding. Dean Davenport has referred to Luther Burbank, a man we go back to. Robert Bakewell followed this system of always keeping the environment that surrounded his animals up to the standard to which he had bred them. We do know that has an influence, and that you cannot raise the one and lower the other—you have got to keep them abreast. Take, for instance, our breeds of wool sheep. Probably that character of producing a fine fleece is more firmly fixed than any other improved character, or in any other class of live stock. It ought to be, therefore, very firmly incorporated into that stock. Take the highest form of improved sheep and put them under the primitive conditions of the range, for instance, where they are subjected to all kinds of privation and you will find in a very few generations they will revert more or less to the primitive type. And so it is in any other class of live-stock work—you have got to keep the conditions that surround your stock up thoroughly to the standard, or else the stock will be pulled back. Therefore it is highly esesntial that if we produce blood lines that are capable of great things, we see to it that those things are given an opportunity to develop by our system of feeding and management (and in their feeding I would include everything that pertains to management), or we never can realize in full on that particular animal.

There are one or two or three phases I would like to dwell on. The first is the necessity of ample feeding. You do know (most of you, I presume) that about one-half of a normal full ration is utilized by the animal in simply maintaining himself. Now of course if it is a dairy cow you are keeping that would mean she is simply kept going out of half of that ration. If you are talking about a work-horse it means that he is simply maintained in normal health. If you are talking about a growing animal, it means that that foal can just hold his own—that there is no surplus left

to grow on. Now the important thing to remember is this: In the first place, this ration is utilized for two things: In the first place for maintenance; in the second place, production. The important thing is this, that the animal never goes half way with you. The relation of the part of the ration that is utilized for maintenance to the part of the ration that is utilized for production is exactly the same as the relation of a first mortgage to a second mortgage. In other words, that animal will satisfy maintenance requirements before he will use a pound of his ration for production. Now when you find men feeding colts half a ration —just enough to keep them from going back—see what they are depriving that colt of. A colt has so many days to grow in, and the thing for the feeder to do is to get the maximum growth every day he lives. You can't catch up. If a colt goes through one winter, for instance, you will find as a rule he is a stunted colt; he never can make up what he has lost in that short time. So the object should be to bear in mind that the colt should have a full ration in order to make his growth, and he must then have that ration every day in order to utilize every growing moment he has.

As we said this morning, the size is a factor nowadays in market horses. They want their hunters big, and every pound you get on a draft horse adds to the actual price of that horse. So we cannot afford in any case to lose a minute of time that should be utilized in attaining the maximum weight.

So far as feeding is concerned, I want to refer to the draft horse. It has been contended that one good reason we cannot raise as good draft horses in America as they can in France is the fact that we won't feed. I find, especially in the East, that the notion is to feed all horses alike. I know a man near my home who has a draft stallion and a road horse in the same barn, cared for by the same man and absolutely in the same manner, and they are getting so they look exactly alike—his draft horse looks like his road horse. The draft horse is a different type—as a grand piano is different from an upright piano. It is a distinct pattern. Now this pattern consists of lines and dimensions that require a cer-

tain amount of fat to carry them out. Do you recall, in your experience, an acquaintance who perhaps has been normally a fat man and who has lost weight through a fit of sickness? Now he may still weigh as much as you do, but he looks thinner. Why? Because his whole proportion was intended to be filled out. You know there is no thinner animal on the farm than a thin hog; he is ten times thinner than the most scrawny cow. A spare form is in keeping with the cow, but a hog's lines are all round and full, and when you take that away you have destroyed the symmetry. I am pleading for fat on the draft horse. But I believe that too many, especially Eastern men, labor under the impression that draft horses are excessively fat when they are not. Now it is perfectly normal for them to be a whole lot fatter than any other horse you have to do with. When you think he is too fat to breed or too fat to work, and you let him down you will find it will be a detriment to that horse. I say it can be overdone—it is normal for that horse to carry a certain degree of fat, and it is normal for that horse to be filled out in his form, and in order to do that he has to have a lot of rough stuff. He not only has to have an abundance of everything, but the character of his ration has to be different and you have got to do it with rough stuff. So don't think that the draft horse's condition is a condition of reducing weight. He has got to be a great big horse than can eat a whole lot of feed and then utilize the feed. The draft horse works all the day. I contend the fat on his back is the most normal condtion. There is absolutely no reason why these draft horses should not be fed out to a condition of fullness, and it applies especially to the colts. You understand that if you want to get any colt down to the best form you have got to feed him fully.

So far as the specific feeds are concerned, there is one that I would like to refer to, and that is perhaps the most common—the timothy hay. Now it is a fact that timothy hay has a physiological effect on a horse. It acts as a feeler; it has a mechanical action; it acts as a mechanical feeler that keeps him hard in a way

that no other ration does. To that extent, perhaps, the price is justifiable. You must remember this: If you are going to feed timothy hay you must feed something else for the horse to live on. If you are going to confine your grain ration to hay, make it something else besides timothy.

There is one other thing that applies to the feeding of horses in general, and that is our feeding standards. I want to say this about the standards: We have to have them. It is true our American experience has demonstrated that most of the German standards are a little high. And as protein is the most expensive part of the ration, it is really the constituent upon which the value of the ration is based. The lower we can cut down the protein, the less the cost of the maintenance. These standards, then, are standards, take them as such. I believe the man who feeds altogether by these standards, by rule of thumb, is losing the art. I consider that feeding is an art and not a science. You know the scientist does things absolutely; the chemist gets things to the fourth or fifth decimal of accuracy; the man who does mechanical drawing does it with a compass and measurements that makes it absolutely correct. Now on the other hand the artist is furnished his material and everything is approximate, but it depends upon his own ingenuity what his results will be. I believe we ought to cultivate, more than we do cultivate, the idea of artistic feeding. By that I mean simply this: Don't depend too much upon any feeding standards; don't depend on anybody's rules.

You often go through a stable and you find the name of the animal, the age and some other data that applies to her, and what she is getting. Now any boy could go in there and feed those cows—all he has got to do is to get the stuff and throw it in. I think the way to feed those cows or horses is to have a man of sufficient intelligence or horse-sense so that he don't need a man in the office in a swivel chair to tell him what to feed. You cannot figure it in the abstract; you cannot say that this cow gives so many quarts of milk—one cow will excel in one way and one another. Here is a horse that is doing so much work. The man who studies the horse knows that no two horses are alike—that

they have individualities that require consideration from the feeder, and the man who would be an intelligent feeder is the man who can appreciate those things and supply them as demanded. One of the most forcible arguments along this line that I ever heard was in Iowa. The man who had just fitted that grand champion steer was called before the students to tell how he fed it. This matter of feeding balanced rations and all that stuff was fresh in their minds. They began to quiz him. He looked at them rather blankly for a moment and then said, "I did not balance his ration—the steer balanced his own ration." He could go in that stable and I believe he could tell you the minute he stepped in what he needed. The way he consumed his grain, the consistency and the color and the odor of the excrement, and all such things as that, told the story and I haven't a doubt that if an analysis had been taken of the ration that Sam Johnson was feeding that steer, it would have been found pretty nearly accurate, corresponding to the requirements of the so-called German feeding standards. And yet this was the result of his own observation rather than any hard and fast rule that he was following.

Now in order to make my little rhyme I might add another word, and this might be "Lead." You must remember that most market horses are sold on the halter, or at least that is the way they are shown first. The draft horses are sold that way very largely. Of course your saddle horses are usually under saddle, but the first look is usually shown in hand. Now it is an actual fact that the first impression you get of an animal is a lasting impression. If you had a chance to see him under proper conditions, you will find that that is the impression that ought to stand by you. If you get a little fickle and change your mind, nine times out of ten you will come around to your original opinion. It is absolutely legitimate to present a horse with his best foot forward, as it were—create the best impression of which that horse is capable. It is only fair to the horse and to you. In order to do this a horse has got to be in a position to lead. Many and many a time you will hear a man say, "This horse

never makes any show on the lead." As a matter of fact, the buyer has formed his impression nevertheless, and that impression may have caused a little prejudice that he never will get away from. Therefore I think that men who are producing market horses should feed and breed along these lines, and then give this primary instruction. I do not think that a man, unless he is capable of going all the way through, should do very much with schooling. You will find, as a rule, that men will pay as much for a green horse absolutely in the rough because a little attempt at schooling him by an incompetent man will spoil him. And when it comes down to a final decision the question is, " What can he do? " Many an ill-shaped horse has been passed and accepted by a prospective buyer over a horse that has been twice as good-looking as he—he did his work in a more efficient manner. And you will find that the thoroughly schooled horse is the only horse that can give satisfaction. Therefore unless you are competent to go all the way through, don't attempt to do any of it, but leave that to the man who is more competent.

I believe, to summarize, we may say this: In the first place it is essential that a man should read. I am going to leave these words with you: READ, BREED, FEED, LEAD, and if you follow that practice I also believe we are safe in assuming that we could append the final word, SUCCEED. (Applause.)

GIVE THE HORSE A CHANCE was the title of a folder 11 inches long and 4½ inches wide, which lay beside each man's plate at the New Jersey Road Drivers' Association dinner, March 12. The folder contained a description, by Dr. James McDonough, of the five-calked shoe advocated by him to give the proper side support to the hind limb of a horse. It was illustrated by five clear cuts, and the descriptive matter, including the report of the committee of veterinarians appointed by the V. M. A. of N. J. to examine the limbs of horses (published in the REVIEW last summer), was clear and concise; and in the hands of the many horse lovers present should do much good in advancing the adoption of that most sensible shoe.

THE DIAGNOSIS OF DOURINE BY COMPLEMENT-FIXATION.*

By John R. Mohler, Adolph Eichhorn and John M. Buck, Pathological Division, B. A. I., Washington, D. C.

Dourine is a specific infectious disease affecting under natural conditions only the horse and the ass, transmitted from animal to animal by the act of copulation, and due to a single-celled animal parasite or protozoan, the Trypanosoma equiperdum. It is characterized by an irregular incubation period, the confinement of the first symptoms to the genital tract, the chronic course which it runs, and by finally producing complete paralysis of the posterior extremities, with a fatal termination in from six months to two years.

In the United States the disease was first suspected in 1885 and recognized in 1886 by Dr. W. L. Williams, who was then a practitioner at Bloomington, Ill. The State of Illinois took hold of the outbreak and as a result of rigid prophylactic measures the disease was eradicated from the state in 1888, but not before an affected stallion had been shipped to Gordon, Nebr., thereby starting up a new center of infection in that locality.

In 1892 dourine was again brought into public notice by the appearance of an outbreak among the breeding horses of northwestern Nebraska, the history of which suggested that it originated with this Gordon stallion. After an expenditure of about $5,500 by the Bureau of Animal Industry the disease was considered to have been eradicated from that section of the country. Five years later the infection again made its appearance in the same portion of Nebraska, and early in 1899 the bureau again began the work of eradication. Many inspections were made, and those animals which were found diseased were purchased and killed. Many obstacles were encountered and the disease evidently kept smoldering during 1900.

* Presented to the fiftieth anniversary meeting of the American Veterinary Medical Association at New York, September, 1913.

In 1901 the infection appeared with increased vigor, this time in the Pine Ridge and Rosebud Indian Reservations in South Dakota, in addition to northern Nebraska, and more stringent measures were immediately inaugurated to control the spread of the disease. However, eradication in this region was extremely difficult, owing to the wild condition of the country as well as of the horses, and from the fact that many horse owners would try to conceal from the inspectors animals which they knew to be affected with the disease. In 1906 the last suspicious cases of dourine were destroyed in South Dakota.

In the meantime during the year 1903 dourine was reported in Van Buren County, Iowa, and successful steps were immediately taken to stamp it out. No connection could be established between this outbreak and that in Nebraska, but it was quite definitely determined that an imported Percheron stallion purchased by a company of farmers was responsible for its appearance.

Another outbreak of dourine was discovered in Taylor County, Iowa, in 1911. The diseased animals, together with all exposed stallions and mares, were immediately quarantined by the state. Those showing lesions of the disease and those exposed horses that reacted to the complement-fixation test were purchased by the government and destroyed. It is now believed that the infection is entirely eradicated from Iowa. The source from which this center of infection was derived is only a matter of conjecture, but there is apparently no connection between this and any of the previous outbreaks. No authentic information as to the origin of the outbreak was discovered, but all cases lead back to a Percheron stallion, which was imported in 1909 and brought direct to Lenox, Iowa.

Early in July, 1912, the state veterinarian of Montana reported several suspicious cases of dourine in eastern Montana, and forwarded blood sera from the suspected animals for the complement-fixation test. All but one sample gave positive results, thus establishing a new center of infection of dourine. From present indications this outbreak appears to be the most

extensive of any of the previous outbreaks, involving also two Indian reservations in North and South Dakota, but a force of 12 federal veterinarians assisted by state representatives is at work on the disease, and the infection is well under control.

The difficulty of diagnosing chronic and latent forms of dourine is generally recognized, and owing to this fact the control and eradication of this disease in horses has been of slow progress and sometimes ineffective. In such outbreaks it has been the custom to trace the disease as far as possible to its origin, and then keep under observation all mares and stallions which directly or indirectly have been exposed to the disease. At the same time animals which show clinical evidences of the affection are destroyed without delay and by this means several of the outbreaks which have occurred in the United States have been checked and eradicated.

The microscopical demonstration of the Trypanosoma equiperdum in affected horses is very frequently unsuccessful, although our more recent experience proves that they may occasionally be found in the serous exudate of the plaques and also in the fluid of the œdematous swellings of the genital organs in the stallions as well as in the mares.

Of course this procedure of diagnosis can be attempted only when the disease occurs in farming localities where the animals can be readily observed and examined as desired. On the other hand, in the present outbreak in Montana and adjoining states the conditions make the diagnosis by the demonstration of trypanosomes impossible, and likewise animal inoculations cannot be satisfactorily utilized for this purpose. Horses in that locality are bred under range conditions; they run wild and a roundup takes place only once a year. The difficulty of an examination even clinically of such animals is obvious, since they have not been broken to the halter and are troublesome to handle.

Our experience with the disease in Montana showed that only a limited number of animals were clinically infected. Nevertheless association of all the animals without any restriction in the breeding periods indicated that a larger number of animals

would be found infected, which as a matter of fact has been proven by subsequent tests, as shown below.

Owing to the fact that until the last few years the eradication of dourine in this country was supposed to have been complete the disease has received only slight attention as compared with other menacing diseases of our domesticated animals. It was not until the outbreak in the State of Iowa in 1911 that the necessity for devising a method of diagnosing this infection began to be fully realized. The value of being able to detect the latent as well as verify the clinical cases became apparent. Otherwise the necessity existed of maintaining a long-continued quarantine in those sections of the country where cases have been discovered. While little difficulty has been experienced in recognizing the advanced cases, a clinical examination alone naturally permitted many infected animals to escape detection, only to constitute a menace to the further spread of the disease until the appearance of symptoms justified the diagnosis.

Inasmuch as the complement-fixation method of diagnosis has been employed with such gratifying results in connection with numerous other diseases the possibility of applying this method to dourine naturally suggested itself and steps were therefore immediately taken to determine the feasibility of its application to this disease.

It was very early discovered that the problem of preparing a satisfactory antigen was to offer considerable difficulty.

Efforts were primarily directed toward utilizing for this purpose the different organs of those horses that had succumbed to the disease. Several of the clinical cases were shipped from Iowa to the Bethesda Experiment Station during the outbreak referred to above, in order that a more complete observation might be made of the development of the disease, and material might at the same time be available for antigen preparation.

As these animals died from time to time certain tissues were obtained which it was suspected might furnish the desired results, but although shake extracts of the spleens, livers, kidneys and bone marrow, as well as alcoholic and acetone preparations were

employed under various conditions, the results were rather of a discouraging nature.

Subsequent to this time there came under our observation publications by numerous investigators who had given this subject consideration. It will suffice to mention the publications of Landsteiner, Müller and Pötzl, Levaditi and Yamanouchi, Hartoch and Yakimoff, Schilling, Claus and Hösslin, Citron, Weber, Manteufel, Manteufel and Woithe, Zwick and Fischer. The results in these instances appeared to have been unsatisfactory, which was also the case in the extensive work on the diagnosis of dourine by the Wassermann method by Trajan Pavlosevici, as he concluded that while anti-bodies can be demonstrated by this method in laboratory animals infected by trypanosomes, the method cannot be utilized in stallions affected with dourine.

Later Winkler and Wyschelessky, Mohler and also Watson in their work on complement-fixation as an aid in the recognition of trypanosomiasis indicated the good results obtained in the diagnosis of dourine. Likewise Mattes in his work on the agglutination of trypanosomes obtained gratifying results, while Brown also concludes that complement-fixation can be utilized for the diagnosis of trypanosome affections.

In the recorded publications it was observed that the more promising results were obtained by those who employed suspensions of pure trypanosomes. The organ extracts and other preparations of antigone generally used for this purpose proved unreliable. The procedure as recommended by various workers in obtaining an antigen from pure trypanosomes and using such a suspension as the antigen has also been tried by the writers with uniformly good results. The practical application of this procedure, however, would be very laborious and require a great deal of time, especially in cases where a large number of horses have to be tested by this method. Accordingly, it was deemed advisable to devise a means by which an antigen could be prepared which would give similarly good results but would not require such delicate and laborious technique. In place of the specific trypanosome of dourine being utilized the writers selected

the surra organism, as it had been previously ascertained by several investigators that the reaction obtained was not absolutely specific for any one trypanosome infection, but was rather of a group nature.

As dourine is the only known trypanosome affection of horses existing in this country, the value of even a group reaction was immediately appreciated and attention was directed to the carrying out of this idea in our diagnostic work.

In place of preparing suspensions of the trypanosomes, however, an antigen was made of the blood and macerated spleens of rats killed at the height of surra infection. This was placed in a bottle containing glass beads and shaken for six hours filtered through gauze and carbolized. The results from this antigen prove dsatisfactory and was used repeatedly on the blood of the dourine horses that were left of the Iowa shipment.

The smallest quantity of the serum which gave a positive reaction with the antigen was .05 c.c., while the various comparative tests indicated that even a fixation in .2 c.c. of serum is sufficient for diagnostic purposes.

Sera from normal animals, also those affected with various other diseases, failed to give a reaction.

This antigen proved active on 10 consecutive days, but failed to produce fixation of complement on substequent tests.

Later attempts by the same procedure also resulted less satisfactorily, and it was therefore deemed advisable to try other methods in order to procure an antigen of more uniform action.

The following procedure was next employed:

After successive examinations of the blood of a dog infected with surra, about 200 c.c. were drawn from the jugular vein when the microscopic examination revealed a tremendous infestation with the parasite. The blood was drawn into a one per cent. potassium citrate solution into large centrifuge tubes of 100 c.c. capacity. A quantity of potassium citrate solution was used, equal to the amount of blood drawn into each tube, and 0.5 gram of saponin was added to each tube, in order to dissolve the red blood corpuscles. After a thorough shaking and complete hemo-

lysis had taken place it was centrifuged for 30 minutes at 2,500 evolutions and the supernatant fluid was siphoned off. The residue which was of an opaque color and which consisted principally of trypanosomes was then thoroughly mixed and shaken up with salt solution when it was again placed in the centrifuge; this washing was repeated three times. After the last washing the thrown-down opaque mass was emulsified with 50 c.c. salt solution and titered as to its merits as an antigen for dourine tests. The results were highly satisfactory and the titer was established at ½ c.c. of this emulsion per tube. The disadvantage was soon apparent on account of the difficulty in the preparation of this antigen and also the small quantity which was obtainable from a single bleeding of a dog.

In July, 1912, the above-mentioned outbreak of dourine was discovered in the State of Montana.

Several samples of blood sera from clinical cases were forwarded by the state authorities to the pathological laboratory for verification. Positive reactions were obtained in numerous instances with antigens thus prepared, establishing conclusively the presence of the disease in this state, as well as suggesting the possibilities of the test as a means of its eradication.

It was not long before discovery was made that the disease was quite widely spread in Montana owing to the previous failure in its recognition.

In an endeavor to comply with the request of the state authorities to diagnose a large number of animals, it was soon apparent that a different method would necessarily have to be devised in order to make the desired progress.

It was at this time that our present method of preparing antigen was first employed, which is as follows:

Various organs from rats just dead from surra were tried out in a fresh and preserved state, and the results which were obtained from the fresh suspension of the macerated spleen of a rat just dead from surra gave the most promising results. In order to establish whether such an antigen would constantly or at least in most instances give the results desired, it was repeat-

edly tested on positive serum of horses affected with dourine, as well as on horse serum known to be free from immune bodies of dourine. After repeated tests on clinically affected dourine horses showed the antigen to be uniformly constant in its action, the procedure of diagnosing dourine by this method was definitely adopted.

Preparation of Antigen.—Gray or white rats are infected with surra by injection of 0.2 c.c. of blood from a rabbit infected with surra. Since tests have to be made every day to keep up with the large number of cases submitted and as the antigen proves effective only when prepared fresh, it was arranged that at least two rats should die daily with the disease. When the rats appeared to be at the point of death late in the afternoon it was found that placing such rats in the ice chest until they die furnished a better antigen than when they have died in the cage during the night and have to be used the following morning.

The spleen from the rats is removed, placed in a mortar, and ground up with a small amount of salt solution to a pulpy mass. From time to time more of the salt solution is added and the suspension thus obtained is filtered twice through a double layer of gauze into a test tube. The quantity of the suspension from each spleen is made up to 40 c.c. by dilution with salt solution.

This suspension constitutes the antigen for the tests of the suspected dourine sera. Dr. Traum who was temporarily assigned to this work found that when the suspension was titered against a known positive and negative case of sera in graduated quantities, the best results were obtained, and this method has since been adopted. The quantity of antigen employed is double the amount necessary to produce complete fixation with positive serum. The table on the following page gives the method of titration of the antigen as practiced.

Half the quantity of antigen which in the negative serum does not inhibit hemolysis, providing this quantity is at least double the amount necessary to produce complete fixation with the positive serum, indicates the titer of the antigen. Thus for instance if tubes with negative serum 1, 2, 3 and 4 show com-

plete hemolysis and 5 and 6 slight inhibition, and at the same time tubes with positive serum 6, 5, 4, 3 and 2 show complete fixation and 1 partial fixation, the quantity of antigen for the test proper would be 0.2 c.c. of the antigen.

TABLE SHOWING METHOD OF TITRATION OF ARTIGEN FOR THE COMPLEMENT-FIXATION TEST IN DOURINE.

Tube.	1. NaCl Solution. c.c.	Serum. c.c.	2. Antigen. c.c.	3. Complement. c.c.	4. Hemolytic Serum. c.c.	5. Blood Corpuscles, c.c.
			Positive Serum. For one hour in incubator.			
1	2	0.15	0.05	1	1	1
2	2	0.15	0.1	1	1	1
3	2	0.15	0.15	1	1	1
4	2	0.15	0.2	1	1	1
5	2	0.15	0.25	1	1	1
6	2	0.15	0.3	1	1	1
			Negative Serum. For one hour in incubator.			
1	2	0.15	0.1	1	1	1
2	2	0.15	0.2	1	1	1
3	2	0.15	0.3	1	1	1
4	2	0.15	0.4	1	1	1
5	2	0.15	0.5	1	1	1
6	2	0.15	0.	1	1	1

1. 0.85 per cent. NaCl solution.
2. Suspension of macerated spleen from rat.
3. The determined smallest quantity established by titration.
4. Sensitized rabbit serum.
5. 5 per cent. suspension of sheep-red blood corpuscles.

Occasionally the antigen does not prove satisfactory for the test and has to be discarded. In these cases the fixation in all tubes is apparently due to the excessive amount of proteids from the spleen. Experience has shown that the excessively large spleens contribute such an antigen. This, of course, is indicated by the titration undertaken prior to the regular test. At other times it was found that the antigen proved satisfactory the following day when it was allowed to stand in the test tube over night and the supernatant fluid drawn off for the antigen. This is then retitered and the titer established in accordance with the results of the test.

THE COMPLEMENT-FIXATION TEST.—The test proper for the diagnosis of dourine is carried out in a similar manner to that practiced for the diagnosis of glanders.*

*A more detailed description of the technique of this method as applied to glanders will be found in Bulletin 136 of the Bureau of Animal Industry, by Mohler and Eichhorn, under "The Diagnosis of Glanders by the Complement-Fixation."

The hemolytic system consists of sensitized rabbit serum, serum from a guinea pig and a 5 per cent suspension of washed sheep corpuscles.

The serum to be tested is of course inactivated for one-half hour at 56° C. and is used in the tests in quantities of 0.15 c.c., since it has been found that fixation in this quantity is obtained only with sera of horses affected with dourine. Tests to determine the smallest quantity of serum of dourine horses which will give a fixation showed that in several instances even 0.02 c.c. of serum was sufficient to give a complete fixation. The complement from the guinea pig is always titered previous to the test, as it is absolutely necessary to use the exact amount of complement to obtain the best results, since a deficiency or an excess of complement would interfere greatly with the reaction. In the numerous cases which have been tested the results were almost invariably definite, and only on a very few occasions was it found necessary to make retests on cases which appeared atypical. The reaction is always very marked and in our work only a complement-fixation with the quantity of serum mentioned is recognized as a positive reaction. It is only natural that in the tests the usual number of checks should be employed in order to insure reliable results.

Since the testing has been undertaken by the described method 8,657 samples have been examined from Montana, and the Cheyenne and Standing Rock Indian Reservation in North and South Dakota. Of these, 1,076 gave positive reactions, which appears to be a very large proportion, but when it is remembered that these animals were kept under range conditions without sanitary or veterinary control and also that before the disease was recognized as dourine it had been diagnosed for a long period as some other affection, it will be recognized that the opportunity for the spread of the disease was ideal.

With the present system of diagnosis by which even the latent cases can be determined, it is hoped quickly to eradicate the disease. All the horses in the infected localities will be submitted to the complement-fixation test, and by co-operation with the

state authorities means will be devised to dispose of the affected animals in such a way as to make further spread of the disease impossible. The animals which were destroyed as a result of the disease in the above-named localities and which were diagnosed by the complement-fixation test showed in most instances some lesions indicative of the disease. In some of the cases there were no indications of a progressive paralysis, but the lesions existing in the genital organs of either the male or female were sufficient for confirmation of the diagnosis by the complement-fixation test.

It is therefore evident that the diagnosis of trypanosome infections by the complement-fixation test is of very great importance, especially in countries where only one of these protozoan diseases exists. By this means it is possible to determine all infected animals within a short time, and dispose of them by methods best suited for the control of the infection. Furthermore the introduction of the disease into any country could also be guarded against by a compulsory requirement of this test on all horses imported from countries in which dourine is present.

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Dr. S. J. Walkley Writes from Washington, D. C.—Under date of March 14, a communication was received at the Review office from Secretary Walkley of the National Association Bureau of Animal Industry Employees, where he was at work in the interest of the Lobeck Bill, H. R. 9292. The doctor states that in an interview with the Chief of the B. A. I., he was convinced that there was no opposition to the movement. In fact, he had advised inspectors in charge throughout the country who had consulted him to affiliate with the movement, and expressed the hope that the efforts of the organization would result in mutual benefit to the employees and the department. Dr. Walkley stated that at that writing no definite date had been set for the hearing on House Bill No. 9292, and he wished to offer a final appeal to all veterinarians and veterinary students to use all possible influence in having publicity given the legislative work on the Lobeck Bill in their local newspapers. Upon almost every Congressman's desk, he states, he noticed copies of their home papers.

Autotherapy Night was the announcement on a postal issued just prior to the March meeting of the Veterinary Medical Association of New York City; and we have since been informed that many medical men graced the meeting with their presence, in addition to the large attendance of veterinarians, and that that interesting and truly wonderful method of treating disease was thoroughly discussed by an enthusiastic gathering.

Market Horses, by Carl W. Gay, is the title of an article on page 30 of the present issue. This commonsense talk by Dr. Gay before the members of the New York State Breeder's Association is just what we need by veterinarians throughout the country.

A PRELIMINARY REPORT ON THE VALUE OF LEUCOCYTIC EXTRACT FROM A THERAPEUTIC STANDPOINT.*

By R. A. Archibald, Oakland, Cal.

Subsequent to the publication of an article in the *Journal of Medical Research,* Vol, 24, No. 3, June, 1911, by Hans Zinsser, Geo. W. McCoy, and C. W. Chapin, on the protective influence of leucocytic substances upon experimental plague, the writer conceived the idea that if leucocytic substances could be obtained in sufficient quantities to be not only thereputically practical, but commercially possible, that a decided step forward would be made in the biological treatment of infectious diseases.

Prior to the publication of the above mentioned article, Hiss and Zinsser, *Journal of Medical Research,* Vol. 14, No. 3, 1908, and Vol. 15, No. 3, 1909, demonstrated in an experimental way that leucocytic extracts could be prepared by injecting into the pleural cavities of rabbits, ten c.c. of a meat extract broth containing three per cent. starch and five per cent. aleuronat. At the end of 24 hours, a copious and very cellular exudate will have accumulated in the pleural cavities. This is obtained by killing the rabbits and removing the exudate which is immediately centrifuged. The leucocytic sediment is diluted with twenty volumes of sterile distilled water to one volume of sediment, and autodigestion is permitted to take place in the incubator, following which the extract is stored in a refrigerator until used.

In experimenting with animals, Hiss and Zinsser observed that pneumococcus, staphylococcus, menenococcus, typhoid, dysentry and cholera infections in rabbits and guinea pigs were profoundly modified when injections of leucocytic extracts prepared as above described were administered intraparitoneally or subcutaneously, during the course of the infection. In many cases, animals were saved by these substances from infections which

* Presented to the fiftieth anniversary meeting of the American Veterinary Medical Association, New York, September, 1913.

proved rapidly fatal in untreated control animals, even when the protective injections were made as late as 24 hours after intravenous infections.

In applying this method of treatment by subcutaneous injections to infections in man, Hiss and Zinsser observed distinctly beneficial results in cases of epidemic cerebro-spinal meningitis, lobar pneumonia, staphylococcus infections and erysipelas.

Hiss and Zinsser's idea was that injecting into infected subjects the substances composing the cells usually found in exudates in a diffusible form, that such substances would, following absorption, relieve or stimulate the fatiguel leucocytes.

Later, Zinsser, assisted by McCoy and Chapin, conducted a series of experiments on white rats, with a view to ascertaining whether substances obtained from normal leucocytes would modify in any way the course of experimental infection with the bacillus pestis. As the result of their experiments these workers found that the use of emulsions of normal leucocytic substances obtained from rabbits exerted a distinctly protecive influence even when such substances were administered 24 hours after the inoculation of rabbits with virulent plague organisms.

While the results obtained by the above mentioned investigators were intensely interesting from a practical standpoint, their method of obtaining leucocytic substances must be considered as having little value, as the injection of a proteid substance into the plural cavities of rabbits yields such a small amount of leucocytic substance as to rob it of much value from a therapeutic standpoint.

For the purpose of throwing some light upon the nature of bactericidal substances in leucocytic extract, Wilfred H. Manwaring, *Journal of Experimental Medicine,* Vol. 16, No. 3, September, 1912, conducted a series of experiments. Manwaring started out with the assumption that there exists powerful bacterioloytic substances within the cytoplasm of certain body cells, and that this fact is amply demonstrated in the automatic sterilization of old abscess cavities and the sterilizing of the pneumonic lung, which is assumed to be due to the liberation of endolysims,

the result of cellular disentegration. His work was with a view of extending the present knowledge of these lytic substances, and to determine the approximate chemical nature of the bacteriolytic substances that might be extracted from leucocytes.

In obtaining leucocytes for these experiments, Manwaring at first followed the practice of injecting rabbits with a five per cent. suspension of aleuronat into the plural cavity; but he found that he was decidedly handicapped in his study of the nature of the extract so obtained on account of the small amount of substances available. By injecting aleuronat into the plural cavity of a rabbit, one seldom secured more than a single cubic centimeter of leucocytes. In order to overcome this obstacle, he selected the horse for the continuation of his work. His treatment consisted in injecting into the plural cavity of the horse from three hundred to five hundred c.c. of a five per cent. aleuronat in two per cent. starch paste solution, the starch being added to aid in holding the aleuronat in suspension. Following such an injection there are usually found from one to three litres of pleural exudate daily for the first week, the yield then decreases, and usually ceases entirly about the 15th day. The exudate contains about five per cent. of leucocytes. Manwaring's experiments show that while the extraction of a bacterial substance from leucocytes is attended with considerable difficulty, still he was enabled to demonstrate that it could be done by carefully observed technique. Manwaring, while not being able to arrive at a final conclusion as to the nature of the bactericidal substances in leucocytic extracts, did reach the logical conclusion as the results of his investigations, that the bactericidal substance present is probably an enzyme.

About this time Jobbling and Strouse, *Journal of Experimental Medicine*, Vol. 16, No. 3, September, 1912, published an article on their "Studies of the Extent of Leucocytic Proteolysis." These investigators used in their experiments leucocytes obtained from inflammatory pus, also fresh dog leucocytes obtained by plural cavity injections of aleuronat.

Their conclusions were that the proteolytic action of leuco-

cytes is a readily established fact, and that this action depends upon the presence of two proteases, one capable of acting in an alkaline, and the other in an acid medium, with possibly a creptic ferment which is apparently capable of acting in either an acid or alkaline medium.

We could, did circumstances permit, go on and recount the results obtained by other investigators, showing that leucocytes do contain intracellular substances which possess poleolytic properties, but from a study of the question from a therapeutic standpoint the result obtained by later investigators, and the personal work of the writer and his co-workers indicate that the proteolytic action brought about by the parenteral injection of leucocytic substances, does not influence in a marked degree the progress of an infectious disease. The writer was able to demonstrate in vitro bacteriolytic properties in leucocytic extracts produced by the method devised by him, but he long ago reached the conclusion that such bacteriolytic powers were not sufficient to account for the profound changes actually produced in animals suffering from bacterial diseases while undergoing a course of treatment by the parenteral injection of leucocytic substances. For the reason of these profound changes, we must look elsewhere than to the direct lytic action upon the invading bacteria.

As the result of experimental blood counts and tests made and being made, we believe that the great therapeutic benefits derived depend upon the production of a hyper-leucocytosis, and attendant phagocytosis, rather than upon any direct action of the leucocytic extract itself.

It is a well established fact that the parenteral injection of protein substances increases the leucocytic count, and even the injection of a foreign vegetable proteins, such as nuclein preparations, produce in many infections marked beneficial effects. It would soon, however, in carrying out leucocytotherapy that in order to produce a hyperleucocytosis without unnecessary strain upon the organism that it is eminently more logical for the organism to care for parenteral injections of substances similar to its own elements than to any elements which are of an alien character.

It is also a well established fact that in the treatment of diseases any method that will stimulate the leucocytic producing organs to more active functioning, thereby producing a leucocytosis, is and must of necessity be of positive benefit. The great problem before us then in this connection is to ascertain the simplest and most innocent means of accomplishing this end.

About the beginning of the year 1911, the writer instituted a series of experiments with a view of obtaining leucocytic substances in quantities that would render them not only therepeutically practical, but also commercially possible. The general plan adopted was the obtaining of leucocytes directly from the blood of normal animals, avoiding any changes in their character, as might be possible during the process. It would be obviously impossible for us with the time at our disposal to go into detail as to the various methods instituted to bring this about. Suffice it to say that after much experimental work had been done the following general technique was adopted. The blood is obtained under aseptic precautions from the jugular vein of a horse or other domestic animal, is allowed to flow into sterile flasks containing a sufficient quantity of a one per cent. sodium citrate solution to prevent coagulation. The blood is then centrifuged, the serum and citrate solution is syphoned off, and the corpuscles are treated with a five-tenths of one per cent. solution of acetic acid and again centrifuged. This process is repeated several times, until the red blood corpuscles are eliminated. The leucocytes are then washed with physiological salt solution three or four times to remove most, if not all trace of the acetic acid, after which they are ground in a mortar with quartz sand. To the washed and ground leucocytes is then added about five volumes of sterile distilled water to one volume of leucocytes. This mixture is exposed to a temperature of 58° C. for one hour, when it is placed in the incubator for a period of twelve hours, and again exposed to a temperature of 58° C. for one hour. This process of exposure to different temperatures is continued for two or three days, or until auto-digestion is complete. It is then centrifuged, the supernatant fluid decanted and sufficient trikresol added for preservative purposes.

As to the changes produced following the parenteral injections of the above described preparation, will state that we do not propose to enter into at this time a long technical description of the various experiments instituted and being instituted for the purpose of throwing some light upon the action brought about by injection of leucocytic substances. In conjunction with Dr. Gertrude Moore, to whom I am deeply indebted for kindly consenting to help in this work, the results of our investigations along these lines we hope will be published in some scientific journal in the near future. We will simply state at this time that the use of leucocytic substances parenterally injected give rise to a marked leucocytosis accompanied by profound changes in the leucocytes themselves. You will please pardon us, however, if we briefly give the results of one experiment, which will serve to bear out the statement above made.

Following the subcutaneous injection of two c.c. of leucocytic extract obtained from horses' blood into a rabbit, the blood changes were observed at frequent intervals for a period of 36 hours.

The injections were made at 9 a. m., at 10.30 a. m. a marked leucopenia was observed, which was followed by a leucocytosis, which reached its maximum at 3 p. m. of the same day. The leucocytic count then dropped to slightly above the normal at midnight, when another upward curve was observed, which reached its maximum at 2 p. m. the day following. This was followed by a gradual decrease to near the normal. It will be interesting to note that two distinct curves occurred in the total leucocyte count within the period of thirty-six hours, at the end of which time the count showed a tendency to persist at a point about one hundred per cent. above the normal. While the total leucocyte counts were intensely interesting, the differential counts were infinitely more so. The polymorphonuclear neutrophiles increased about one hundred per cent., the small mononuclears decreased about one hundred per cent., the large mononuclears decrease about twenty-five per cent., while the eosinophiles increased about eight hundred per cent. In all our experi-

ments we found that there occurred a marked eosinophilia. In fact, in one rabbit, the eosinophiles showed by differential count forty-four and two-thirds per cent. of the total count.

Much study has been given to blood pictures in this connection, according to the methods of Arneth, who, you no doubt are aware, claims to be able to estimate the resisting power of an individual by a differential count of the polymorphonuclear neutrophiles with respect to the number of their nuclei. Arneth claims that in cases with low resisting power there is a preponderance of cells with one nucleus, while in cases with good resisting power the percentage of leucocytes with from three to four or five nuclei is increased. It is too soon, and we are not yet prepared to interpret the probable significance of the profound changes that were observed, and we crave your indulgence to defer offering any opinion on this phase of the question to a later date. These brief notes of some of the changes observed are simply made at this time to demonstrate that in the study of the action following the parenteral injection of leucocytic substances we must conclude that the changes produced are of intense interest and will require much more thought and study before an interpretation of the results produced is even attempted.

Experiments are already under way to determine the different effects, if any, following the parenteral injction of lucocytic substances obtained from various animals into a series of animals of the same species, with a view of ascertaining whether an extract from a different species will give rise to the same changes as an extract from the same species. Manoukhine and other Russian workers have in the treatment of pneumonias and other infections used leucocytes taken from the patient's own blood and claim to have had splendid results, but whether future investigations will solve the problem as to whether more benefit may be derived from the use of an individual's own leucocytes, the leucocytes of another individual of the same species, or the leucocytes of an individual of a different species, is yet to be determined.

Another vital question that requires investigation is to deter-

mine whether leucocytic substances obtained from a hyperimmunized animal possesses specific therapeutic powers. Practically no research has been conducted along these lines, but what little work has been performed tends to demonstrate that a leucocytic extract obtained from a hyperimmunized animal differs in no respect from that obtained from a susceptible animal.

The practical therapeutic application of leucocytic extracts has been followed out during the past year not only in our own practice but also by other practitioners. Various infections have been treated with, in some types of infections, encouraging results, while in others the beneficial results were not so marked.

The diseases to which the treatment has been applied and which have given the most gratifying results, are such infections as purpura, influenza, pneumonia, etc. In the case of purpura the agent seems to be, if you will permit us to use the term, a specific. In such cases, about the third day following the daily injections of the extract, the swellings, no matter how marked, disappear from the extremities and the mucus membranes clear up. In fact, all the characteristic clinical manifestations of toxemia incidental to this infection disappear and the animal makes an uneventful recovery in from ten days to two weeks. Apparently hopeless cases of purpura make nice recoveries following the daily intratracheal injections of the extract. The extract is administered in daily doses of from seven to ten c.c. intratracheally. It is given intratracheally for the reason that when given subcutaneously it was found to cause intense swellings, which, while giving rise to no unpleasant sequelae, have a tendency to alarm owners or attendants. Just why marked swelling follows the subcutaneous injection of the extract we are not prepared to state, but it is possible that on account of the slight acid reaction possessed by the extract, a so-called acidosis is produced with an accompanying oedema.

In conclusion, we hope to be pardoned for touching so superficially upon the various phases of this subject, but the problem possesses such magnitude that it is obviously impossible during the limited time at our disposal to go deeper into the subject

matter at this time. Our only excuse for presenting the matter in such a crude manner is that perhaps other laboratorians may be stimulated to take up the work and that as a result of investigation by a number of individuals working independently a therapeutic remedy of positive value for the alleviation of human and animal suffering will eventually be produced.

HORSES SAVED THE CITY.—In the recent snow-bound condition in New York City the horse proved to be still master of the situation; whether it was for the purpose of hauling fuel to keep the population from freezing to death, food to keep them from starving to death, or the fire apparatus to keep them from burning to death. A horseless city, as have been the asinine aspirations and predictions of some *advanced* people, would, in the recent series of snowstorms, have caused a sad spectacle in New York, Philadelphia and other large cities!

PROMOTED TO THE RANK OF SALISSA.—Dr. Jacques E. Aghion, Bey, veterinarian of the state domains, Sakha, Egypt, an old subscriber and contributor to the pages of the REVIEW, was on leave of absence during the past summer, during which time he visited the veterinary schools of Lyon and of Alfort, meeting the principals of each, and visited the Royal College of Veterinary Surgeons, London, where he was courteously received by Sir John McFadyean. But higher honors were in store for him in his own country. His Highness the Khedive promoted him to the rank of "Salissa," which entitles him to be called "Bey."

SEVENTEENTH ANNUAL REPORT UNITED STATES LIVE STOCK SANITARY ASSOCIATION.—This report will come from the printer before March 1. It is of unusual interest and value to every live stock sanitarian. The article on "Federal Meat Inspection" by Dr. V. A. Moore, dean, New York Veterinary College, is worth several times the price of the book.

Please send immediately your orders for as many copies as you can use at $1 per copy, enclosing remittance to cover.

JOHN J. FERGUSON, Secretary-Treasurer,
Union Stock Yards, Chicago, Ill.

THE PASSIVE TREATMENT OF CHRONIC BONE AND ARTICULAR LAMENESS.

By Mart R. Steffen, M.D.C., V.S., Brillion, Wis.

In the following treatise I desire to show that in the treatment of chronic or confirmed lameness whose pathology involves to a greater or less extent osseous structures, including such conditions as spavin, ringbone, splint and sessamoiditis, the surgeon can obtain prompt and more satisfactory results as far as cosmetic effect is concerned without resorting to actual cautery.

In the appended table of nineteen cases of high-grade, chronic bone lameness fourteen cases were permanently and completely cured of lameness without leaving the slightest scar; and in over half of these cases the exostosis disappeared entirely, while in the remainder it was reduced in varying degrees.

The results in the five cases which did not make a complete recovery are shown in the table, one of these cases having been submitted to actual cautery later with recovery following.

The veterinarian whose practice is among drivers and the veterinarian whose patients consist of pure-bred or high-grade draft horses finds it greatly desirable to overcome such lameness without marking the patient for life. Once a horse is fired for spavin he remains always a spavined horse, whether he recovers from the lameness or not. He permanently wears the tag of unsoundness. With the treatment which I shall outline and which I have used successfully for a number of years this is not the case.

I could show the reader horse after horse which has been treated in this manner for spavin or ringbone which would pass the average examination for soundness; in which not only scars of operation such as follow firing and sometimes blistering are absent, but in which also all trace of previously existing exostosis has disappeared. Furthermore, in many of these cases the results were obtained with the patient doing his regular work every day.

Careful selection of cases is of course essential. On this point

I have only one rule which I adhere to absolutely. I treat no case which does not "warm out" of the lameness. The horse that goes just as lame after he has been driven a mile or two as he did the first few hundred rods is not a good case for treatment; not only my treatment, but any other form of treatment. Such cases have a lameness which is to a great extent mechanical; encroachments of the exostosis upon the articular cartilage, into the articulation, adhesions to tendons or ligaments, destruction of the articular cartilage, etc., etc.

I think most surgeons will agree with me that the cases in which a reasonable assurance of recovery can be given are those in which the horse "warms out" of the lameness. The other form—never.

Actual cautery is practically the only genuinely empirical treatment to which modern veterinarians have clung tenaciously. Tenaciously is the word exactly.

Not only should we try to get away from it because it is empirical. It is also decidedly barbarous, cruel, and in the light of present-day progress in surgery and medicine has no place in our professional armamentarium.

A few of us there may be who do our firing under local anaesthesia, but they are not the ones who do the most firing. The busy surgeon puts a twitch and a side-line on his patient and "goes to it." And though his patient may go sound at the expiration of six to eight weeks of idleness he bears the brand ever after of spavin, ringbone or splint or whatever unsoundness the case may be. Give your patient every chance.

I tell you that you can get a complete recovery in seventy per cent. of these cases without the iron; get recovery just as quick if not more quickly, with no scars or marking and no protracted period of idleness. Then should your patient turn out to be one of the thirty per cent. who do not recover under this treatment you still have something up your sleeve; you can still fire, do cuneau tenotomy or tibio-peroneal neurectomy. You will find, I can assue you, that one recovery without resort to firing is worth several recoveries with the iron.

My line of treatment for these conditions is iodine locally and potassium iodide internally. It is not a new method by any means, except in so far as relates to my method of applying the iodine locally. This I do in the form of resublimed iodine dissolved in an essential, highly volatile oil, suspending this solution later in a heavy, non-volatile oil. This can be applied indefinitely without producing the slightest irritation and yet will produce a most pronounced alterative action locally. This local effect is obtained by thoroughly rubbing in the oily suspension. That the iodine is liberated and retained in the tissues to which it is applied in this manner is evidenced by the fact that in white horses the skin in the region will often assume a bluish-black tint where the applications are made for a prolonged period. This pigmentation slowly disappears after varied intervals following the discontinuation of the oil containing the iodine crystals; usually a period of several months elapses before the skin clears up again entirely.

Given a case of spavin, ringbone, splint or other bone lameness, properly selected, I clip the hair closely around the entire joint (in the case of spavin or ringbone) or part involved. Here is the first point in the proper application of the iodized oil, namely, taking in a sufficiently large area around the lesion. It is of little use to apply the treatment only directly upon the exostosis. I apply it freely over a large surface contiguous to the lesion and persist in the applications day after day, in some cases continuing the treatment daily for four weeks without intermission.

This is the second point in applying this treatment properly. The applications must be made daily; the whole area to be painted with the oil once a day and this to be followed by immediately rubbing the oil into the parts briskly, taking at least five minutes by the watch for the rubbing.

About the second week in the course of this treatment I put my patients on potassium iodide, one dram doses three times daily on the feed—in solution, of course. I keep this up for ten days or two weeks, unless symptoms of iodism appear sooner.

Here we find more evidence that the iodine in the oil gains entrance to the tissues when applied as described above, and this from the fact that animals in which these rubbings of the iodized oil are being made become saturated with the potassium iodide very quickly, and in exceptional cases symptoms of iodism may appear in a few days after they are put on the potassium iodide.

If it is not putting the owner to much expense or inconvenience I direct that the patient be given rest the first week; otherwise I merely caution the driver against unduly exerting the animal, especially as regards turning in or out too suddenly. Also, as is meet, I see to it that the horse is properly shod.

In summing up I would call attention again to the forms of lameness for which this treatment is to be used. I do not recommend it in cases of tendon, ligamentous or bursal lameness.

In my opinion, basing it upon my success with this line of treatment, a veterinarian has no right to disfigure a horse by firing except as a last resort. The point to bear in mind with this treatment is this: Don't be stingy with the iodine; *put it on* and continue to put it on. And then try to produce iodism with the potassium iodide. The following table is a record of cases treated recently in this manner.

Case No.	Class.	Lameness.	Duration of treatment.	Result.
1	Drafter	Spavin	8 weeks	Sound.
2	Express	Spavin	5 weeks	Not quite sound.
3	Drafter	Spavin	1 week	No improvement.
4	Driver	Spavin	3 weeks	Sound.
5	Drafter	Spavin	4 weeks	Sound.
6	Drafter	Spavin	6 weeks	Sound.
7	Drafter	Spavin	4 weeks	Sound.
*8	Drafter	Spavin	5 weeks	Improved; not sound.
9	Drafter	Spavin	6 weeks	Sound.
10	Driver	Spavin	6 weeks	Sound.
11	Drafter	Low ringbone, front	3 weeks	No improvement.
12	Drafter	High ringbone, front	8 weeks	Sound.
13	Driver	Ringbone, high, front	7 weeks	Sound.
14	Driver	Ringbone, high, hind	8 weeks	Improved. Fired later. Sound.
15	Drafter	Ringbone, high, front	4 weeks	Improved; not sound.
16	Driver	Sesamoiditis, front	7 weeks	Sound.
17	Driver	Exostosis on Os Calcis	6 weeks	Sound.
18	Driver	Splint	1 week	Sound.
19	Drafter	Splint	2 weeks	Sound.

*Number 8 has since been fired, with no further improvement.

See Examination Notice on page 17 (advertising forms), for Food Inspector.

HOG CHOLERA—DISTRIBUTION AND USE OF SERUM AND VIRUS.*

By M. H. Reynolds, State University and Live Stock Sanitary Board.

Serum Only.—It seems to me that there can no longer be question but that treatment by the serum-only method is a useful procedure and that by it a satisfactory percentage of treated hogs can be saved, which would otherwise have been lost. Its range or usefulness is, of course, limited. Serum-only is useful when properly utilized in infected herds with acute type of the disease and where there is plenty of natural virus. State serum used by the serum-only method should be administered by permit holders, usually veterinarians, but in some cases by trained laymen.

Serum-Virus Method.—The serum-virus method is capable of being made either a great blessing or a curse to live stock interests, depending entirely upon the extent to which its use can be controlled and wisely directed. Up to this time it is doubtful if more good than harm has been acomplished the country over. More than one veterinary sanitarian has expressed the wish that the serum-virus treatment had never been developed.

I wish to offer what I believe to be a fundamental proposition; namely, that virus should be administered exclusively by men in State employ—at least temporarily in State employ. No one should administer virus who has not had proper scientific training to make accurate diagnosis and to operate safely and intelligently.

Under proper official control, serum virus is the proper procedure for healthy herds in infected territory and for apparently healthy hogs in infected herds where the supply of natural virus may be limited. Serum-virus treatment should be very rarely used in uninfected territory and then exclusively by men in regular State employ.

*Presented at a national conference of federal and state officials engaged in hog cholera control work, Chicago, March 3, 1914.

I would not propose to force it upon anybody, but hope to offer something so much more desirable that owners will accept it as a privilege and have no temptation to use virus in any other way.

First; the State should employ a limited number of field veterinarians on full time for services in infected districts where there are no competent local men and for the administration of serum-virus in occasional cases (which should be very rare) in uninfected territory. Minnesota has these field men already available.

For work in infected territory we propose to employ local veterinarians who will work for the time being in State employ. A large number of replies from veterinarians to whom the plan has been submitted comes like a great sigh of relief. Practically everyone approved the plan heartily and offered to serve in the way suggested. This plan proposes to supply serum, virus, and veterinary service. The veterinarian would be paid from a fund supported by farmers for whom work is done. The charge for veterinary service would be based upon the amount of serum used, or possibly upon the number of pigs treated. When a farmer wishes to have his herd treated by the serum-virus method, he will pay the legal price for State serum or actual cost in case the supply of State serum is insufficient and commercial serum must be used. In addition to this he will pay in advance for veterinary service. There would be flat rate for all sections of the State. Serum would be shipped express C. O. D. to the owner. Virus would go to the veterinarian who is to administer the treatment.

The question of pay for veterinary service has not been definitely settled. The rate of pay must be placed so that there can be no reasonable suspicion of graft or excess pay; otherwise the plan will very soon fail, because it will lack public confidence. The veterinarian can well afford to work for the State under this plan,—much cheaper than he could under the old plan for the private owner—for many reasons.

I am counting on the public spirit of my profession and a willingness to contribute a public service on account of a public

calamity. I am hoping that our best veterinarians will accept this plan and agree to do the work for a little less, not very much, but somewhat less than their usual rates.

Our first estimate is that the veterinarian would be paid about $8 for an eight hour day, plus expenses and mileage for his auto or team.

He would go out and do the work on an order from the State. When it is finished the veterinarian would send in his report and receive a check.

Under the present law we could supply State serum and veterinary service for approximately one cent per cubic centimeter.

At present the State is paying three-fourths of the cost of production and owner about one-fourth. I personally believe this should be reversed. The State should pay about one-fourth and the owner about three-fourths of the cost of production, and together they should add a small margin for business safety.

In case such a change as this is put into effect, the State would pay about one-third of a cent per cubic centimeter; and the owner would pay one cent per cubic centimeter for serum and from one-fourth to one cent per cubic centimeter for veterinary service, depending on the amount of work that could be done as one job. This would make a total, if our laws should be changed so as to make the State serum plant self supporting, of one and one-quarter to two cents per cubic centimeter, total cost to the owner for serum, virus and veterinary service.

It would seem that by this plan the dose, method, prompt reporting, determination as to when and where virus may be used and who may use it, will be under direct State control.

Men who get poor results can be promptly dropped from the list of permit holders employed by the State for the work.

Vaccination cholera, a small percentage of which is inevitable, will be under State observation from the start, and adjacent farms be protected.

The veterinarian doing the work will have no money transaction with the owner, no slow or bad accounts, no large advance

investment in serum, express, telegrams, and long distance 'phone calls—no hard feeling with the owner and loss of good clients. He will do the work upon an order from the State, send in his report, together with statement of time, mileage and expense, and receive a check. The owner will be reasonably assured of good serum, careful administration and honest virus.

As previously suggested, there is at present no thought of forcing this upon hog owners. The plan is to offer them something so much better and so much cheaper than they can get by independently using serum, virus and private veterinary service and so violating the law, that they will be glad to avail themselves of the plan as a privilege.

Whether we can put this entire plan into operation for Minnesota, at an early date, depends on the solution of one or two problems with reference to proper handling of funds and administration.

Dr. Salmon Elected to Honorary Membership.—At the January meeting of the Montana Veterinary Medical Association, in Bozeman, Dr. D. E. Salmon was elected an honorary member of the association. It was a very interesting and instructive meeting. Dr. Salmon presented an interesting and valuable contribution to the literature on hog cholera, and the production and use of hog cholera serum, which will be given to the profession through the medium of the Review as soon as space will permit. A resolution indorsing the Army Veterinary Service Bill, adopted at that meeting, is published on page 122 of this issue.

Continues to Be of Greatest Educational Value.—The following from the British West Indies: "Please find enclosed post-office order for $3.60 for foreign subscription to the American Veterinary Review, which continues to be of great interest and educational value to me, and which I consider to be the greatest essential to the successful practice of modern veterinary science. The publication and Dr. Robert W. Ellis have my sincere good wishes for continued success."

WATER IN HEALTH AND IN DISEASE.

By S. J. Alcalay, D.V.M., Elgin, Ill.

The question has many times arisen in my mind whether veterinarians during their whole career have paid much attention to the action and the lubricating power water plays in healthy and sick animals which come under their control.

The rôle water plays as a food and as a dissolvant will be treated from two standpoints: (A) from the experiences and discoveries made by faithful and reliable men who made a special study on the subject. For this English, French and Spanish literatures are consulted, in combination with what personal knowledge a practitioner may acquire from treating about 1,000 to 1,500 cases a year.

(B) From the Book of Nature; that is, from the way nature provides food to its beings that derive nourishment from what apparatus or arrangement they are endowed with towards gaining their sustenance without using any volition.

(A) All authors agree that water must be used in order to be healthy, but disagree as to the times of its use. Some claim that water of no kind should be taken during meals. They claim that nature has provided for what moistening of the food is needed, the three pairs of salivary glands which by frequent use will fully supply the amount of water needed for softening and lubricating the ingesta taken in. This school, which for our purpose may be called " the dry school theory," advocates that it is objectionable to use water with the meal. Among the authors who have studied the water question in live stock one is referred to the splendid work *" Feeds and Feeding,"* by Professor Emeritus, A. Henry, of Wisconsin. He used to say in class " that the stomach of the horse being so small any amount of water allowed to a horse ought to be given about half an hour before the grain feeding, as otherwise the grain may be washed out of the stomach and carried into the duodenum and thus the action of stomachal

juices will have no opportunity of working their corroding action (the HCl action) on the feed.

Probably many authors could be cited, but our space being limited we shall endeavor to study the foreign and American authors, and only those topics which have a more or less close connection to veterinary medicine; or if the application of the findings by the different authors is possible in our profession.

Now let us enter into the chemistry of water. Generally speaking, water, besides its H_2O basic constituents, carries in solution carbonates mostly of lime. All "Ca" compounds are very useful in the body, provided they may be associated with different chemical ingredients useful for the building up of different tissues such as bone, cartilage and the like. Water has the property of dissolving substances and forming both positive and negative "ions" for this reason, water is considered as a powerful and general solvent; that is why it is never pure in nature. This solving property is the one that interests us the most. All foods, with the exception of NaCl, must be digested so they should be available to be taken into circulation and only in a liquid stage. Whether this be in the animal or vegetable kingdom, the function of water in this case is plainly understood.

All the toxic matters generated, whether by healthy or diseased tissues, are mostly excreted in a liquid or semi-liquid stage through urine or sweat, and never totally dry. Even the evacuation of feces is rendered much easier when the alimentary canal is well supplied with liquid matter.

Now the "Wet School theory": Kneip having had great success in the use of water both externally and internally came to a series of discoveries which may be summarized as follows:

(a) Water for internal use is the best means to unload the system from many of its noxious products, and any amount must be ingested between and with meals. He claimed that judicious use of water will prevent formation of stone in the liver, bladder or the like. Many diseases are prevented or overcome by good use of water; it prevents formation of stone in the liver and bladder.

(b) Externally.—The *Spanish Shirt* is, to his estimation, a very useful remedy towards immunizing the system against refrigeration or taking cold.

(B) A hypothesis is advanced that all that which is created over the surface of mother earth is intended for the use and happiness of its inhabitants; and also that nature is an open book for we men, or otherwise animals, endowed with good judgment to study. Now then we see that all foods contain at least 5 per cent. of water. This refers to nuts, but generally speaking the amount of water contained in natural food stuffs, legumes or the like, usually goes as high as 80 and even 90 per cent. Milk, the only food for mammipera at the beginning of their lives, contains a very great amount of water.

I would have put "finis" to this article if it were not for what I have seen; veterinarians forbidding the use of water in their calls out in the country. It may be true that ice cold water is injurious, but otherwise water should be ordered always, and every time. Water helps the system towards absorbing the drugs poured in. I always found that water heated before being mixed to medicine is of a greater help. The heat conveyed to the stomach by the water seems to have a soothing action.

But water may be given to a horse even when he is perspiring from hard work or warm weather. Even in case of fever water may be allowed with a few drops of HCl or acetic acid. In these cases the amount of water should be limited, say to 2 or 3 quarts, not to exceed one gallon; and when the animal is cooled off then the regular amount of water may be allowed. This is my personal experience used with success.

Note.—The Spanish shirt is a long shirt made of a porous material such as burlap, which is wetted and as much water as possible is squeezed out. This shirt is put on next to the skin before going to bed. I have seen this process used and that person who had it on never took cold for that whole season.—S. J. A.

The Review Appreciated in Ceylon.—The Municipal Veterinary Surgeon of Colombo, one of our subscribers in Ceylon, expresses great happiness in receiving his numbers of the American Veterinary Review.

VIABILITY OF THE ANTHRAX BACTERIUM.*

By M. J. Harkins, V.M.D., Philadelphia, Pa.

In the year 1850 Davaine (1) and Rayer (2), in 1855 Pollender (3) and soon after Branell (4) found in the blood of animals dead of anthrax peculiar rod-shaped bodies, the etiological importance of which was later proved by Davaine (5) in 1865.

However, it remained for Robert Koch (6) in 1876 to be the first to artificially cultivate the anthrax bacterium, the first micro-organism of any pathogenic disease to be isolated. In the same year Koch (7) showed that anthrax infected material such as blood, hide, hair, etc., subjected to all possible conditions such as dryness, moisture, decomposed, in a diluted or undiluted form, did not impair the infectiousness of the micro-organism in the slighest degree.

M. A. Barber (8) has shown that the inoculation of sensitive animals with the minutest quantities, single micro-organisms for instance, of highly virulent strains will produce death.

At one time the anthrax spore was considered the most resistant form of spore, but to-day it is well known that certain saprophitic spores belonging to the group of the potato bacilli are much more resistant. Nevertheless the anthrax spore is one of the most resistant of the known pathogenic micro-organisms. This resistance of the anthrax spore is not infrequently demonstrated in nature, as evidenced by sudden outbreaks of the disease in districts believed to be entirely free from anthrax. According to Sirena and Scagliose (9) anthrax spores are preserved in moist or dry earth from 2 to 3 years, in drinking water 17 years, and in ichor 15 months. An estimate of the extraordinary power of the resistance of anthrax spores in nature may be obtained from the reports of Wancke, Kissuth, Müller, Sickert (10) and others, among which is an observation that gravel taken from pits in

*Read before the Pennsylvania State Veterinary Medical Association, at Philadelphia, March, 1914. The Mulford Laboratories, Glenolden, Pennsylvania.

which twenty years previous anthrax cadavers had been buried was responsible for an outbreak of anthrax when the gravel was used as a dressing for walks and driveways. Just as remarkable though not occurring under natural conditions are instances where anthrax spores remained alive and virulent for ten to twelve years in an emulsion or on dried silk threads as reported by Aiello and Drago (11) and for seventeen years reported by Busson (12). It has also been reported that gelatin cultures eighten and one-half years old showed growth when transplanted in fresh suitable medium (Szekley (13)), but no reference is made regarding virulence.

In March, 1900, Dr. M. P. Ravenel immersed several short pieces of suture silk, approximately 5 cm. in length, in a liquid culture or suspenions of anthrax bacteria which were dried and placed in a glass test tube, the tube was sealed with a cotton plug and tight fitting rubber stopper. The sealed tube came into the possession of Dr. John Reichel, who kept it at room temperature from 1905 to 1914. The threads in the test tube were thoroughly dry and without a trace of nutrient media. This point has an important bearing on the question which naturally arose. Could the culture be regained from the dry silk threads and would it prove virulent?

To determine the first point the test tube with the threads was opened carefully on January 26, 1914, and two threads removed with sterile forceps, cut in half and dropped into approximately 5 c.c. neutral plain boullon. The cultures were incubated at 37.5 degrees C. for 48 hours, when a moderate filamentous growth was observed, which appeared to be adhering to the thread. The surrounding medium remained clear. A smear of these extensions from the threads stained with Loeffler's alkaline methylene blue revealed a micro-organism conforming in every way with the anthrax bacterium.

Subcultures on neutral plain agar and in neutral plain bouillon gave abundant growths of characteristic anthrax bacterium.

Having shown that the anthrax spore on the threads could give rise to typical anthrax bacterium at this time, the virulence

of the subcultures was next determined. Accordingly two white mice, two guinea pigs, a rabbit and a sheep were inoculated with the following results:

TABLE

Animal.	Number.	Date.	Result.	Bacterial Findings.
White mouse...	4202	1/29/14	Dead 24 hrs.	Anthrax bacterium isolated from heart blood.
White mouse...	4203	"	" "	" " " " " "
Guinea pig....	4208	2/2/14	" 48 hrs.	" " " " " "
Guinea pig....	4209	"	" "	" " " " " "
Rabbit.....	4210	"	" 72 hrs.	" " " " " "
Sheep.....	1226	2/24/14	" 48 hrs.	" " " " " "

From this observation the following conclusions may be drawn:

1. Anthrax spores dried on threads and without nourishment remain viable *i. e.*, able to propagate for thirteen years and eleven months.

2. The spore under these conditions retain some virulence, if not all, for the same length of time.

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HAS NOT MISSED A NUMBER SINCE 1897.—Dr. S. E. Hershey, of West Virginia, says: "Enclosed find check for the REVIEW in advance. I cannot see how any successful veterinarian can be without it. I have not missed a number since 1897."

BARIUM CHLORIDE AS AN EVACUANT IN THE HORSE.

By A. A. Lockhart, V.S., M.D.V., Carnduff, Sask., Can.

I am prompted to publish my experience with barium chloride as a rapid evacuant for the horse, with the hope that it may stimulate others who have had experience with this drug to give some account of its action in their hands and perhaps help to prevent some who are not familiar with its use to avoid serious accidents through not fully appreciating the danger which may attend a slight overdose.

During the past three years I have used in the neighborhood of two pounds of this drug, giving it entirely in solution by the mouth. In that time I have had two deaths, which I can attribute directly to it, and though I am still using it cautiously I never feel quite easy concerning the result until I have had a report next day.

When I first commenced using this drug, I was under the impression that the correct dose for a horse by the mouth was from ʒii to ʒiv.

Winslow, in his latest edition, gives these amounts and also states that he has found it a perfectly safe drug in these doses. He also states that a dose of ʒii may be repeated in an hour when necessary.

I may say that my experience does not bear out these statements. The largest dose I ever exhibited was ʒiii to a good sized work horse.

This dose was given about 11 a. m. About 9 p. m. I was called out with the message that the animal had been purging violently all afternoon and appeared to be in a very bad condition.

I found the patient in a truly alarming state, breathing very much disturbed, actions of the bowels about every five minutes or less with considerable tenesmus. Very little feces were being passed at this time on account of the bowel being pretty well

emptied. The flanks were extremely hollow and the animal kept lying down and getting up at intervals.

I gave immediately a large dose of morphine and atropine hypodermically, which seemed to have a beneficial effect, but in the morning the patient was paralyzed and unable to stand properly even in a sling. It succumbed in about two days in spite of maximum doses of strychnine.

I had a similar fatal result in a light draft horse which received 3iiss. The last occasion on which I had a toxic condition from this drug was this winter. I was called to a farm some twelve miles distant, and upon arrival found a team of horses, both of which presented symptoms of impacted colon, which diagnosis was confirmed upon rectal examination. They were as nearly alike in size as two peas (about 1,050 pounds), and both had received a pint of oil about twelve hours before my arrival. I immediately gave each horse barium chloride 3iss in solution. About an hour and a half later I left to attend another call. At this time one horse had been passing feces at short intervals for three-quarters of an hour and was standing apparently quite easy. The other one was in considerable pain, had passed a lot of flatus but very little feces. That night the owner called me up on the 'phone and said that the horse which was suffering and seemed so sick when I left had become easy about half an hour later. Its bowels had been moving nicely and it was wanting to eat. The other one, however, had purged all afternoon, and he thought it must be paralyzed, for it could not get up. The following day this animal was got into a sling when it was found it could support its weight allright. Fl. ext. nucis vomica was prescribed in 3i doses every two hours and a good recovery ensued.

In conclusion I may say that I have found no drug which has given me such satisfactory results in the capacity of a quickly acting cathartic in the horse as barium chloride given by the mouth, *provided the amount which the animal was capable of standing had not been exceeded.* In my opinion the one and only drawback to the drug is that the effective dose seems to be so perilously near the toxic dose that it is almost impossible to use

it effectively without incurring some danger. Whether one is justified in using it at all under these circumstances is also a matter for debate.

To anyone commencing the use of this drug my earnest advice is never to exceed 3iiss as a dose for any horse. For light horses round 1,000 pounds 3i to 3iss is my opinion the very limit of safety. Doses of this size will in the majority of instances give results; but whether they are *absolutely* safe I have my doubts. Personally, I would not repeat a dose of barium under eighteen hours unless I was quite indifferent to whether the animal died or lived.

Louisiana Veterinary Medical Association held its annual meeting in Baton Rouge, on February 17th, with Vice-President Dr. F. J. Douglass, of New Orleans, in the chair, and Secretary Dr. Hamlet Moore, of New Orleans, at his desk. The profession throughout the state was well represented.

The chief business of the meeting was to consider plans for the reception of the A. V. M. A. in New Orleans in December.

Dr. W. H. Dalrymple, of Baton Rouge, was unanimously elected president for the ensuing year, with Dr. Sheard Moore, of Donaldsonville, La., vice-president, and Dr. Ferdinand J. Cambon, of New Orleans, secretary-treasurer.

A Big Meeting in New Orleans in December.—Our esteemed collaborator, Dr. N. S. Mayo, in sending a report of the annual meeting of the Alabama Veterinary Medical Association, held at Auburn in March, for publication in the Review, says in his letter of transmittal (speaking of the meeting), "It was fine"; and added: "There will be a big meeting in New Orleans next December." This report, from the secretary of the A. V. M. A. who has been mingling with our brothers in the Southland, and reading the signs of the times in their countenances, will be cheerfully received by our readers throughout the country.

Just Can't Do Without It.—An Arkansas brother writes: "Please send me the Review for another year, just can't do without it."

THE STOMACH TUBE A USEFUL PROBANG.

By Chas. F. Wolf, D.V.M., Pioneer, Ohio.

In the American Veterinary Review of January appeared an article in which, to my mind, one of the most useful instruments is not mentioned. The editorial referred to on page 423 contains a statement of method used by the celebrated Johann, in which a loop of wire is pushed down the œsophagus with the hope of encircling an object which is producing choke. I will venture that in most any community there are men, same as there are about here, that will try the methods known to farmers and barn men, of causing the animal to " jump over " something, pour lard down his " throat," or " punch " it down with a broomstick. If you use a fence wire bent into a loop, isn't the farmer likely to try it next time and so save the fee, besides possibly doing injury to the animal? I find most chokes of whole apples and potatoes (round objects) in calves. First, I locate the offending object and if in the cervical region I try to force it back to the mouth by use of both hands, using a sort of milking motion to urge it toward the mouth.

In many instances this procedure has removed the offending object.

If it fails to do so, or the choke is low, I immediately use the stomach tube to first locate the object, then expel it. The stomach tube has a decided advantage over the probang in this: The object (often an apple or potato) is slippery from the saliva, and the probang tends to dodge it, while the tube fits as a disc against it and tends to hold on instead of wedging beside the object. Right here let me say that I prefer a tube of large caliber (as large as you can handily pass). Then, too, if necessary, the tube will carry water or oil right to the spot you want it. The movements of peristalsis naturally carry the body onward, and with but a little assistance usually bodies that will get well down will pass right on into the stomach. In case of choke in the calf, and

the bloat that usually follows, if one is quick there is not necessity of enterocentesis; the bloat escapes through the tube as soon as the tube reaches the rumen.

My reason for using a large tube is this. A stream of given volume broadened out flows with less force than if confined, and produces less reflex contraction against the penetration of the water; also, when the pump is removed larger particles of matter will be removed without clogging the tube. This is applicable whether the tube is used as a stomach tube or as a rectal tube. I use a special steam tube *into* which a Phillips' tube readily wedges, and often have removed whole kernels of corn without clogging the tube. The larger the tube, also the more easily it grips the surface of the foreign object. In nearly fifty cases of choke in various animals only once have I found it necessary to perform a radical operation, as recorded in Merillat's Surgery; and I believe I never have drawn an ounce of blood by the use of the tube. Just one other point: Use a tube eleven feet in length. A high headed horse may take so much tube that your pump will not reach the floor.

They Need Room to Turn Around in Nebraska.—Dr. G. R. Young, Omaha, Nebraska, ex-president of the Missouri Valley Veterinary Association, has recently rented twenty acres within the city limits, on which, he says, to use the doctor's own expression, "I will have a nice place for my business." We suggested to him that he might raise a few horses or mules, and still not be crowded. The doctor's duties have also been increased by his appointment to the State Board of Examiners for a three-year term.

Massachusetts Board of Registration in Veterinary Medicine.—Secretary Babson announces that the Massachusetts Board of Registration will hold its annual June examination of two days on June 24 and 25, 1914. For particulars write to Dr. E. W. Babson, Gloucester, Mass.

The Very Best Printed.—A Minnesota subscriber, in renewing his subscription, writes: "Enclosed find check for renewal of subscription to the Review. It is the very best printed. Thank you for European chronicles and all."

REPORTS OF CASES.

IMPACTION OF THE CECUM.

By A. T. Gilyard, D.V.M., Waterbury, Conn.

The purposes of this article are: First, to apologize for having overlooked the paper on *Equine Typhlitis with Impaction,* written by Dr. Willis Wilson, and printed in the American Veterinary Review of May, 1913. My attention was called to this valuable contribution by the Editor's note following my paper on *Impaction of the Cecum,* which appeared in the March (1914) edition of the American Veterinary Review.

I have since read Dr. Wilson's paper with keen pleasure and much profit; and have come to the conclusion that impaction of the cecum is not rare, but that it occurs more frequently in some localities than in others.

Second, to give a brief account of a treatment which I have recently used for this disease.

In the aforementioned paper presented at last summer's meeting of the Connecticut Veterinary Medical Association, I suggested, since all purgatives had failed in my cases and the cases of which I had read at that time, that a trocar with rubber tube attached be carried in by the way of the rectum and pushed into the cecum that water might be pumped in, in an attempt to float the impacted mass.

Dr. R. P. Lyman, dean of the veterinary department of the Michigan Agricultural College, who was present, suggested that the trocar be driven through the abdominal wall instead of inserted by way of the rectum, and as I had often used this method for introducing antiferments in obstinate cases of intestinal flatulence, I determined to try it, in impaction of the cecum.

On the afternoon of Sunday, February 15, I was called to an aged grey gelding which had been colicky, with some appetite and occasional bowel movements since Tuesday, February 10. This horse had a group of melanotic tumors on the tail and anus and one in the rectum, the size of a hen's egg.

The attending veterinarian had diagnosed "cold in the bowels" and had treated for same with much linseed oil and hypodermic purgatives during the five days of illness. Although the

thermometer stood at eight above and there were few panes of glass in the several windows, I stripped and examined per rectum.

The impacted cecum was quickly located, a doubtful prognosis given and the subject taken a distance of three miles to the hospital.

At nine o'clock that evening we put the horse in the stocks, and locating per rectum the portion of cecum nearest the abdominal wall, I pressed outward with my fingers until an assistant located and marked the spot, which was one inch posterior to the last rib and eight inches below the level of the external angle of the ileum. We prepared the field and I plunged a long, fine-bore Williams trocar forward and downward. Again I explored and felt the canula inserted in the cecum, which lay about two and one-half to three inches from the abdominal wall. We then introduced with the aid of a small-bore rubber tube and a small pump seven and one-half gallons of warm water in which had been dissolved one-half pound of sodium chloride and one pound of magnesium sulphate.

The operation, owing to the smallness of the apparatus, occupied a whole hour. At 9.30, one-half hour after starting, there was a small evacuation from the bowels and at 11.30 there had been nineteen movements of the bowels, quite watery and having a very foul odor. The horse was then put in a box stall, where in the morning we found evidence of the bowels having moved three times; the stools, although soft, contained quite a quantity of incompletely masticated ingesta.

Monday, February 16, no pain, drank water and eagerly partook of three feeds of hay and oats. Per rectum the cecum could be felt to contain very little ingesta.

Tuesday, February 17, external manifestations the same, no exploration until 6 p. m., when colicky pains set in same as before treatment.

Examination at that time revealed the cecum again filled. Regretted having allowed food and repeated the treatment of Sunday night, obtaining fifteen evacuations in two hours.

I then decided to withhold all food for a few days, in hopes that the walls of the cecum would become active enough to prevent another impaction of that organ. On the 18th, 19th, 20th and 21st we gave powdered nux vomica two drams and sodium chloride one ounce twice daily. The salt created an abnormal thirst for water, and the water thus taken seemed to complete

the emptying of the cecum, which on the 18th contained some solid food, although it was not distended. During these four days the bowels continually discharged very foul smelling feces and each day the amount of solid ingesta in the cecum decreased. During this time the horse continually called for food, but none was allowed, although the external appearance of the horse showed nothing to indicate that he was ill.

On the 22d, I could find no solid ingesta in the cecum; but I was able to palpate imperfectly a hard spherical mass about six inches in diameter, which lay within the cecum, seemingly attached to the internal surface of the wall of that organ, this object responded to ballottement, and my best opinion is that it was a melanotic tumor.

As the animal appeared so well I ordered bran mashes and small feedings of hay continuing the nux vomica.

The next day, February 23, I arose at 5.30 a. m. and went to the dog show in New York. During that forenoon the horse went down; they say that he seemed exhausted and could not be raised, so they killed him and called the dead wagon. When I arrived home on the 24th, I learned with extreme regret, not unmixed with anger, that through some misunderstanding the horse had been skinned and cut to pieces and the parts that had not been used had been buried.

Just what caused that horse to go down when apparently doing so well will always remain a mystery to me, but the fact that an impacted cecum may be emptied by this method, I have established, at least to my own satisfaction, and I hope some time to meet my fourth case that I may be able to try it again.

DYSTOKIA AND A FEW CASES MET IN ACTUAL PRACTICE.

By C. F. Dwinal, D.V.S., Bangor, Maine.

Dystokia is an unfavorable termination of parturition and may be of two kinds, maternal or foetal, the most common of which is foetal; and this occurs more often in bovines than in the equine or canine families and fortunately easier remedied in bovine than other families. Many animals with first parturition need assistance when there is no abnormal presentation or deformity in foetus, due no doubt to nervous condition preventing normal dilatation of genital organs.

Early assistance many times avoids serious trouble, and this is true in mares more than in cows, and in this we are often handicapped, since it is customary for an owner to wait or allow some one to attempt to correct trouble who is not skillful enough to do the work, and perhaps has torn or lacerated the genitals to such an extent that it is nearly impossible to accomplish the act of delivering without serious results.

I have seen the vulva and vagina in a mare so swollen by the rough work of a layman that it was nearly impossible to pass the hand through the canal, much more to deliver the foetus.

In another case I found a small portion of an intestine protruding through the vaginal wall, caused either by strong traction or by the foot of the foetus being forced through the wall.

The worst condition which I find for delivering is in an animal so exhausted either by long continued labor pains or my efforts to assist by an empiric so that the animal is unable to rise from the recumbent position or even roll up on the side, as every effort to change position of foetus is immediately followed by labor pains which force the hand suddenly back, if not entirely out of the animal. I was called to treat a case of a cow in a similar condition. Previous to my seeing it a non-graduate had undertaken to effect delivery by means of a grapple on the studding, and a set of blocks, which were attached to the calf, the cow being fastened by the neck with a chain; and from all appearances there had been some strong pulling, all to no good results; only to exhaust the cow very much.

After first giving stimulants to the cow I amputated the head, forelegs at shoulders, opened the thorax and abdomen and removed contents from each, all of which were somewhat decomposed. As the owner informed me, the cow had been due to calve six months before and supposed she had a dead calf in pasture, and did not bother to hunt for it and would have still thought so had he not seen a foot protruding from the vulva the night before, when the cow came up from pasture.

After this dissection of foetus, delivery was comparatively easy. Then I used an antiseptic douche and removed all particles of foreign matter, gave stimulants to be repeated regularly, and recovery took place in a few days.

Another case came under my care not long since. A two-year-old heifer with first calf had been in labor nearly twenty-four hours when I was called; meantime a neighbor had been endeavoring to assist her and had removed both hind legs, it being a lumbo-sacral presentation.

On examination I found it to be a large calf, and I was puzzled when I could not turn it in any way from the position it then occupied, and I could not reach the head to find out what the trouble was, so by means of the embryotomy knife I removed everything down to the head and neck, which was a long job; then I found that there were two heads grown together, and so heavy that I could not move them in the uterus.

The heifer was destroyed, as the owner did not want me to operate on her, and there was found to be grown together two heads, the union being from about the middle of maxillary bones. It presented a peculiar appearance, with two mouths, four nostrils, two large eyes, three ears, one in center of forehead being double size; it weighed thirty pounds.

A third case in a mare was very interesting to me, and the foetus was in a position which I have never seen before or since; neither have I read of anything like it. This mare was a fast pacer, and the owner expected a fine colt, so he had a man in constant attendance for six weeks prior to time of parturition, who was to call me as soon as any signs of foaling presented themselves.

Late in the evening I was called and when I arrived the head, neck and forelegs, and about half of body were present; the mare was almost frantic. She would rush around the stall and after going around two or three times would sit down just like a dog. The colt, of course, was dead.

I amputated the portion of body presenting itself and then I found the hind legs crossed under abdomen and feet were pushed up on either side, so that they were parallel with the external angle of the ilium. By drawing each one down separately, I was enabled to straighten them out; then by forcing the mass back into the uterus, and turning it over, delivery was easy. When this took place the mare collapsed, and for three days lay on a good bed of straw. Then we put her in slings for three weeks.

Outside of a ruptured perineum, which I closed up with silk (but for some reason would not stay sewed), she made a good recovery.

Cases of this kind I find very hard to correct and often require a long time, and I have been so fortunate or unfortunate as to see a great many of them; although there are many other things in veterinary practice that I would prefer to these cases.

OBSTRUCTION OF DIAPHRAGMATIC FLEXURE OF LARGE COLON.

By Dr. S. C. Neff, Staunton, Va.

November 5th I received a call to see a horse five miles from the city. Upon my arrival at the place, I found the horse lying upon the sternum with both front legs extended as far out as possible; every few minutes it would roll upon its side, but would not stay in this position any length of time, but would soon resume the sternal posture; always with both front legs extended as far as possible. Occasionally it would set upon its haunches like a dog. After making a careful examination I told the owner it was a case of obstruction of the bowels, at the same time explaining to him that I considered it a very serious though not a hopeless case. I gave a drench composed of aromatic spts. ammonia 2 ounces, turps. 2 ounces, aloin ½ ounce, linseed oil qt.; left alc. one-half pint to be given in two doses one hour apart. Saw horse again in four hours, symptoms the same, repeated the drench given the first time, less the aloin; also gave one grain of arecoline and one-half grain of strychnine. Left one grain of arecoline to be given in two hours, 4 ounces of alc., ½ to be given in quart of linseed oil in 4 hours, balance to be given in water in 8 hours. I saw horse about seven o'clock on the morning of the 6th, symptoms about the same. Repeated the drench given when I first saw him, also gave grain of arecoline, ½ of strychnine, leaving same to be given in 6 hours, also alc. and one quart of oil at the same time. Saw horse again in 12 hours, pain not quite so bad, but no action from bowels; repeated treatment of morning, leaving medicine to last during the night. I left telling owner that I would see horse next morning; upon arrival owner stated that horse had been restless the entire night, but in the last hour had seemed a little more comfortable. Up to this time horse had neither ate or drank. I offered it a little water, and I think it took 3 or 4 swallows. I again gave oil and stimulants, saw horse again in the evening, no action from the bowels, gave oil, eggs and milk. I kept up about the same treatment for seven days at which time his bowels began to move a little. The 8th day they were opening up well, but no diarrhea; by the evening of the 9th day of sickness his passages had begun to thicken somewhat, but pneumonia had developed in the right lung. Horse died 12 days after I began treating him. No doubt others here have had similar cases and possibly had better results from their treatment. The reason that I selected this case to write

about was to bring about a discussion in regard to the line of treatment that I gave. Whether I gave too much, too little or the right kind of treatment, during the first seven days I gave 3 gallons of linseed oil, ½ ounce of aloin, 8 grains of arecoline, 3 grains of strychnine, aromatic spts. of ammonia terps and nux., also ½ gallon of alc. and one quart of whiskey. From the 3d to the 9th day of his sickness I gave him every 12 hours ½ doz. of eggs and one gallon of milk, always using stomach tube both for giving medicine and feeding him. Rectal injections of one to two gallons of warm water were given every 4 or 6 hours. The pneumonia, I am sure, was caused by some of the oil entering the lung while the owner was drenching him. As owner stated that he had been having some trouble to get horse to swallow. At no time was there more than one degree of temperature until pneumonia developed.

TRAUMATIC LUXATION OF THE PATELLA.

By James M. Cooper, M. D. V., Cincinnati, O.

A most interesting case of traumatic luxation of the patella from the trochlea came under my observation recently.

A team of bay horses were being driven over a street viaduct, when the off horse fell on the asphalt paving. In falling he fell first on the left side, and in attempting to regain his feet, fell again on the right side. When released he regained the standing posture. On examination he carried the right leg, the foot being about two feet from the ground, in a cramped position. There was a marked prominence of the stifle joint, which stood out in a rotund manner. This prominence at the stifle was general, hard to the touch, the preponderance of which was situated externally. The patella could not be outlined, and there was absence of inflammatory phenomena. On attempting to force the limb downward, the patient manifested great pain, and each attempt in this direction was met with failure, the foot being continually kept from the ground. There was no crepitus. The animal was hauled in an ambulance to the owner's stable, where the patient was subjected to the sling. Here effort was made to correct the dislocation. This procedure was extremely difficult and painful, the patient falling in the sling with a groan. Every act of forcible manipulation met with no success, the leg remained raised, and the cramped attitude constant.

Owing to the unique character of the case, it was decided to

let the animal rest, and advised hot fomentations applied to the stifle joint, and later the application of an anodyne liniment. Next day there was no change, and every effort at correction met with no result. On the third day the foot would come down to the coronary band of the opposite limb, and sometimes rest there, but otherwise there was no change in the condition. At this period consultation was sought, and the diagnosis confirmed of outward dislocation of the patella. United attempt was made to correct the luxation, but without success.

Being at a loss to bring the joint into its normal position, it was decided when treating the patient, for the attendant to adhere to our instructions, and forcibly manipulate the parts, and to move the affected limb backward, forward and from side to side, with the possibility of bringing the patella back into its place. On the fourth day, while engaged in this practice, the attendant reported hearing a snap, and the leg came down suddenly. On examination later the patient displayed extreme lameness, the stifle being greatly swollen and painful, and the animal would walk on the toe like an azoturia patient. On palpating the stifle joint, the animal would evince great pain by grunting. The vasti and rectus muscles were tense and contracted. The stifle was carried outwardly. The next two days showed quite a modification in the patient's condition, but continued to walk on the toe as described, and with abduction of the limb. Ten days later lameness disappeared, and the swelling nearly all gone. In fourteen days, nothing could be discerned, and up to the present time, five months since the accident, the animal performs his wonted duties, without any attending sequel. Judging from the scarcity of case reports regarding this condition it must be of rare occurrence. This instance was a genuine case of patella luxation, without any complication, as fracture or ligamentous tear, as the subsequent perfect recovery would seem to indicate. In conclusion I would suggest, in consequence of my experience, the proper course to pursue would be, when cases of this kind present themselves, to cast the animal, and administer an anaesthetic and forcibly reduce the luxation, which I am confident can be easily done.

ANOTHER MONSTROSITY.

By Dr. H. Bergh, Suisin, Cal.

Responding to a call to attend a cow (a large Durham), I found her straining considerably. She had delivered a calf early

in the morning and of course the attendant thought everything was O.K., until he found out that she was again in distress. On arrival I examined the cow and found another foetus in her.



Within an hour I had the calf delivered, and by looking at the dead calf, discovered something very unusual about it. As the picture shows, it had only one eye, between the ears. It had no upper jaw, the lower jaw was turned upward and contained three large teeth; had a large tongue, one large ear and one small one. A very short and heavy neck. The tail was only 2½ inches long. Everything else about the calf was perfect.

ENORMOUS CYSTIC CALCULUS IN A BITCH.

By Harry Frederick, D.V.M., Suffern, N. Y.

In looking over literature on calculi, I find that those occurring in the urinary bladder of dogs are usually small, and there is likely to be more than one present in the bladder so affected. The case occurring recently in my practice was directly the opposite.

The patient was a five-year-old undersized shepherd bitch and quite fleshy. The owner said that she had been passing blood in the urine for at least six months and possibly more, but he had noticed nothing else abnormal.

Examination by palpation of the abdomen revealed very plainly a hard object encased in the bladder. *Diagnosis—calculus.* The owner was told that an operation was the only treatment indicated and that that might fail on account of the size of the calculus. The operation was not immediately performed. In a few days the patient was suddenly taken very ill and died as a result of uremia and septicaemia.

I should also add that I observed the animal a few days before her death and that the urine had a very offensive odor and was passed often, the blood appearing in the last portion only.

Upon post mortem a calculus of the following description was found: Shape, oval; size, 2 in. by 1⅝ in. by 1¼ in.; weight, 57 grams (2 oz. avoir.); surface, rough (sand-like); color, brown. The mucous membrane of the bladder was badly lacerated and inflamed and the walls of the organ much thickened.

School for Health Officers at Harvard.—Beginning with the past fall, Harvard University and the Massachusetts Institute of Technology are to maintain in co-operation a school for public health officers. The object of the school is to prepare young men for public health work, especially to fit them for administrative and executive positions in health organizations. The requirements for admission are adequate instruction in physics, chemistry, biology and French or German. The medical degree is not a pre-requisite, but the administrative board strongly urges it.

Would Have Good Work Appreciated.—An Ohio subscriber says, in renewing his subscription: "Good work should be appreciated in every field. Hence I have great pleasure in renewing my subscription to the Review."

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. Liautard, M.D., V.M.

A Case of Psammoma [*Capt. B. A. Jarvis, Army Veterin.*]. —This aged mare has had abscesses of the off shoulder and later, after an attack of impaction of the stomach, but for a long time has been in good condition. Returned to her work, she has fits of sulkiness, lasting two or three days to a fortnight. Sometimes she is taken while at work, stopping, unwilling to move for half an hour or more and then walks quietly to her stable. She seemed, between the attacks, very quiet and presenting nothing abnormal. Left in a box, she stands sometimes with her head near a corner. When the sulky fits became more frequent, she remained for hours in one position, head down near the ground, all legs drawn together. She frequently had rigors. Often she stood quite still, with a straw in her mouth. She for days kept turning her head and neck in an upward and backward direction towards the near side. There was no other peculiar symptom. Psammoma being diagnosed, the mare was destroyed. A large psammoma about the size of a large goose's egg was found in the left ventricle of the brain. Also a small tumour in the right. It was as big as a walnut.—(*Vet. Record.*)

Potato Poisoning in Cattle [*E. McSwinney, M.R.C.V.S.*]. —Calves from seven to nine months have for a week fed once daily with heavy food of small cooked potatoes and a little Indian meal, with hay, grass, etc.

Two get very sick. They passed a small quantity of fluid feces, refused food. One is found stretched apparently unconscious, with corneal reflex absent. Slow, almost imperceptible respiration. Another is lying on the chest, head turned to the right. He is drowsy and semi-conscious. Breathing regular and at times snoring. A subcutaneous injection of strychnia (½ grain) was made to both and 15 minutes later one of ten ounces of hot normal saline solution. The rumen of both calves was punctured, and foul-smelling gas escaped. Soon the calves began to show some improvement, and then received a drench of oil with pint of very strong tea afterwards. This was given again

two hours later. The next morning the calves were found in good health. The food was changed and no more cases of sickness returned.—*Vet. Record.*)

Interesting Abdominal Case [*Prof. F. Hobday, F.R.C.V.S.*].—Pedigreed bull bitch had metritis which, rebellious to treatment; necessitated the removal of the uterus and ovaries. This was done under the influence of morphia, with the abdomen painted with tincture of iodine. The muscles were sutured with catgut and the skin with silkworm gut. Nine days after, while everything seemed to progress well, the bitch showed uneasiness and when she is examined a piece of the omentum is seen protruding from the wound. The dog was secured and the omentum carefully excised and the stump returned in the abdomen. One of the ligatures of the muscles had given way, and through the opening the omentum had slipped. The muscles were resutured again, also the skin and the wound dressed with iodine and antiseptic cotton over, kept in place with bandage. In a few days the cicatrix was perfect.—(*Vet. Journ.*)

A Puzzling Case [*E. Wallis Hoare, F.R.C.V.S.*].—Five-year-old Labrador bitch is lame on the left fore limb. A week before she was struck on the right flank by the front of a motor. Eight days after, when taken for a walk, while going she stopped, sat down, raised her left fore paw from the ground and walked home lame. After a few hours rest she appeared all right. This manifestation returned on several occasions. No lameness is now present, but the leg is icy cold and pulsations of the radial artery are almost imperceptible. Walked a short distance the lameness appeared. Examination of the heart shows cardiac impulse very weak, and the sounds difficult to detect. Pulse of the femoral is very irregular. Animal is in good condition and has good appetite. Treatment: Digitalis and iodide of potassium are prescribed with massage and liniment on the affected limb. A week later the conditon of the heart is improved, then the pulse was felt at the radial artery and the report was that the lameness has also disappeared.—(*Vet. News.*)

Uncommon Renal Conditions in Calves [*W. J. Young, F.R.C.V.S., D.V.S.M.*].—Two conditions are not infrequently met with.

Fibro-plastic nephritis.—Erroneously named, as nephritis is absent. It is met only in calves and as a rule both kidneys are af-

fected, the lesions being in the form of disseminated white patches on the surface. Sometimes there are depressions over the region of the lesions and at other times the kidney is atrophied. On section the white spots are wedged shaped, with the base of the wedge towards the cortex. The cause of this condition is obscure, perhaps of microbic origin, always it has not been proved; perhaps the excretion of toxic substances say others. It is also supposed that it is the result of incomplete development. High feeding has also been considered as the cause. The condition must not be mistaken with tuberculosis.

Melanosis.—Was found in the kidneys of calves from three to six weeks old, The deposit was confined to the kidneys, which were of normal size and consistency. The pigment was in the cortical portion of the organ, the pelvis being normal.—(*Vet. Record.*)

An Unusual Dislocation [*T. O. Richardson, F.R.C.V.S.*] —Concise record of the case of a bay hunter gelding which in a run with the Cheshire hounds jumped quite a small fence and sustained such an injury that he was shot immediately. Both metatarsals were protruding through the skin on the anterior aspect of the fetlock. Capsular and lateral ligaments of the fetlocks being ruptured. On the off leg the suspensory ligament was divided, the extensor and flexor tendons being intact. On the near leg the extensor tendon was ruptured, the suspensory ligament and the flexors being intact.—(*Vet. Record.*)

Twin Foetuses [*J. Wright Conchie, M.R.C.V.S.*].—A pregnant three-year-old heifer is in labor since several hours and is in extreme exhaustion. On examination it is found that a very large calf is in breach presentation in a very small pelvic space. Besides, quite a number of feet, six or seven, are felt. They were fore and hind limbs. One first pair of hind legs was drawn out and removed with part of the foetus at the loins. The other hind legs were treated in the same way and as some fore legs had also been removed, attempts to turn over the foetus and secure the head failed us, the poll only could be reached. As the case was hopeless and the animal pretty well worn out, she was destroyed. The bodies of two calves joined at the sternum were found at postmortem, with the forelegs round one another's necks and feet extending backwards. The union seemed to be made up of cartilage and fibrous tissue. A photograph of both heads illustrates the report.—(*Vet. Record.*)

FRENCH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Foreign Bodies in Dog's Stomach [*Prof. Coquot*].—After a few general remarks on the subject the following case is recorded.

A fox-terrier is taken out for a walk by an office boy who amuses himself in throwing stones in a river close by. The dog, excellent swimmer, jumps in the water and goes after the stones. The next day he is sick, has all the symptoms of colic of carnivorous animals, vomits and throws up saliva, viscuous glairs and one stone. The abdomen is painful, and by auscultation deep, loud noise is heard, due to the presence and knocking of stones which had been swallowed. An emetic is given, two large stones are thrown up, successively followed by two others. During the night the dog vomits again two more stones, and the next morning is found in perfect health. The seven stones weighed together 460 gramms, and their size varied between that of a hen's egg and a large nut.—(*Rec. de Med. Vet.*)

Methylene Blue in the Treatment of Wounds [*Major E. Laricux, Army Vet.*].—Peroxyde water and tincture of iodine are excellent for the dressing of all wounds, but for the author methylene blue is superior. He has used two formulas, one is composed of blue 2 gramms, alcohol at 90 degrees 10, 5 per cent. solution of phenic acid, 100 gramm, the other has 3 gramms of blue, 5 of borax, 120 of distilled water. Larieux has used either with the greatest results; in a very short time he has been able to return horses to work. He mentions among the cases he restored by that treatment, contused wound of the fetlock, fistulous withers, broken knees, fistula of the croup due to the prick of a stable fork, deep wounds of the canon, superficial and extensive saddle and harness wounds, etc. The drug is much cheaper than any others and the only objection to its use is the coloration it leaves on the tissues to which it is applied. But with a little care and attention that can be reduced to the minimum.—(*Ibid.*)

Intestinal Constriction and Occlusion With Distemper Origin [*Assistant Major Bonaud, Army Veterinarian*].—Six-year-old half bred stallion had distemper which had relapsed two months after. A few days after the beginning of this second attack he had mild colic with complete absence of feces. Soon however the symptoms become more severe. The horse is

restless, looks at his flank, is covered with profuse perspiration, lays on his back often. Rectal examination shows an organ empty, but the cause of the obstruction is not detected. The condition soon gets worse, colic more severe, general aspect is very bad. Through the rectum, always empty, a large swelling is finally detected in the dorso-lumbar region. It feels slightly elastic and almost painless. Notwithstanding rectal injections, the administration of pilocarpine, of cafeine, the horse died after an illness of 12 hours.

At the postmortem the abdomen was the seat of the principal lesions, viz.: 10-12 litres of sero-bloody fluid, omentum congested, the intestinal circonvolutions are here and there adherent to the trunk of the mesenteric and to a round mass which is a large abscess of the mesenteric lymph glands, containing a great quantity of thick, yellow pus. The small intestine runs through the thick walls of the abscess and the three arterial fasciculi of the great mesenteric are also involved with them.—(*Rev. Veter.*)

Canine Piroplasmosis [*L. Naudin*].—Scottish setter is ill since a few weeks, has lost a great quantity of flesh, and is very anaemic. There is no fever, no sugar in the urine and very little albumin. He has a great many fleas over his body and the examination of the blood revealed a number of hematies with piroplasms. The diagnosis is certain. For one month the dog is treated with chlorure of calcium and injections of methylarseniate of soda with very little benefit. Finally, three days apart, two intravenous injections of 10 c.c. of a solution of trypanblue (1 p. 100) are made and as the result is not entirely satisfactory, two more injections are made two weeks after of 25 gramms of the same solution. Five weeks after the progress was well marked, the condition improved gradually and finally clinically recovered, was returned to his owner. However for some time after hematies with parasites were found in his blood, but the piroplasm were in state of degeneration, viz., with a globular form.—(*Rev. Gen. de Med. Vet.*)

Tuberculosis in Goats [*Mr. Chausse*].—It is accepted that goats are rarely affected with tuberculosis; but perhaps this is due to the possible error made between the lsions of vermiform broncho-pneumonia and the only few typical cases that had been observed. Prof. Moussu however has demonstrated that goats living in places with tuberculous bovines could easily contract tuberculosis. Closer examination of the lesions would demon-

strate that after all the disease is not so rare. The writer describes the lesions he has found in his capacity of Sanitary Veterinarian in an adult she-goat, where the lungs, after being affected with pneumonia, had besides characteristic lesions of tuberculosis. The bronchial and mediastinal lymph glands were diseased also. Numerous tuberculous bacilli were found in the glands and in the pus of the pulmonary abscesses.—(*Hyg. de la Viande et du Lait.*)

Atloid Hygroma in Dog [*Prof. Coquot and Lebarque*].—This is a very exceptional affection in canines, say the authors, they have found no record in their French literature.

One year old setter had two swellings, occupying a symetric situation, a little below the poll, on each side of the neck. The history of the lesion is unknown, but it is not traumatic. The swellings are as big as the fist, occupy the lateral faces of the 3d and 4th cervical vertebrae, they are distinct one from the other, painless, fluctuating and mobile under the skin. By pressure free riziform or hordisform granulations are felt in their cavity. The diagnosis being established of an atloid hygroma, puncture of the tumors was made, about 250 cubic centimeters of fluid were taken off, and their cavity injected with iodurated water (1 in 50) 30 c.c. in each, followed by a massage of 10 minutes. The result was that four days after the tumors were replaced by two iodurated small masses which gradually disappeared.—(*Rec. de Med. Veter.*)

Botryomycosis of the Upper Lip—Submaxillary and Retro-Pharyngeal Lymph Glands in a Horse [*J. N. Ries, Governmental Veterinarian*].—Five-year-old gelding has a diffused induration of the upper lip without apparent cause. There is difficulty in the prehension of food. Soon hard and painless swelling of the sub-maxillary glands makes its appearance. A blister applied is followed by the formation of several small abscesses. The upper lip became very hard, of the size of the fist, it is indurated. It shows many little tumors from which pus can be squeezed out. The general condition gives way from want of nourishment. Iodide treatment externally and internally is prescribed. After a few weeks the retro-pharyngeal glands become involved and the treatment seemed of no benefit; the animal was destroyed.—(*Rec. de Med. Vet.*)

Poisoning With Sulphur [*Mr. Brissot*].—Five pounds of sublimate sulphur are mixed carelessly with moist bran and given to five horses for their evening meal. One fine mare, three years

old, ate the largest share of it. The next morning she has diarrhoea, the feces being mixed with yellow greenish fluid. She can scarcely stand up or walk; she staggers, the features are depressed, the abdomen retracted, skin cold, pulse imperceptible, temperature 36 degrees. She has now and then muscular shiverings and repeated nauseas. Prognosis is serious, symptomatic treatment prescribed of stimulating frictions on the legs and body, cafeine and ether. The animal died a few hours after. Post mortem revealed nothing abnormal in the thoracic or abdominal cavities until the stomach and intestines were open. While a strong odor of rotten eggs came out, these organs were found filled with a yellow greenish semi-fluid alimentary mass, from which came out a strong odor of sulphureated hydrogen. The mucous membranes were yellow and covered with sulphur powder. The cause of death was evident and it was only then that information was given of the peculiar meal the animal had had.—(*Ibid.*)

BELGIAN REVIEW.

By Prof. A. Liautard, M.D., V.M.

Large Ovarian Myxo-Sarcoma in a Slut [*Prof. Hebrant and Adjunct Antoine*].—Small size fox terrier slut, about 8 years, is in good condition, but has an enormously developed abdomen. She is not pregnant, and ascitis is at once suspected. Examination of heart, urinary analysis and of the liver does not reveal troubles in their functions. Several explorating punctures are made and give no result. Cyst of the ovary is suspected and laparotomy performed. The abdomen open exposes a mass having the appearance of a pregnant uterus and it is so large that the incision of the muscles has to be enlarged, when it can be brought out. It is an ovary, as large as a man's head. It was removed, the abdomen closed and after a week the slut had recovered. The diseased ovary weighed 3 kilos 750 gram (over eight pounds and a half) and on histological examination proved to be a myxoma with sarcomatous centers.—(*Annales de Belg.*)

Basedow's Disease in a Dog [*By the same*].—Rare in domestic animals, it has been seen by the authors in a dog, 3 or 4 years old, where the ocular troubles consisted in marked exophthalmia. This had been observed before, but had disappeared with rest and iodurated treatment. A few months after the same troubles returned; exorbited globes, hyperhemia of the conjunctiva, staring glances. The character of the animal had

changed; he had become irritable. Muscular twitchings were frequent, the pulse accelerated, yet the condition remained good. Another iodurated treatment was instituted. A month after there was corneal ulcerations, double cataract and the returns of all the symptoms of Basedow's disease. The dog had convulsions and died shortly after. Nothing characteristic was found at post mortem, except hypertrophy of the thyroid bodies, which had a gelatinous aspect.—(*Annal. de Bruxelles.*)

Porrigo by Microsporum in Dog and Cat [*Prof. Hebrant and Antoine*].—Gruby's favus, due to Microsporum Andouini, is rare in animals.

A dog about five years old had cutaneous disease on the flank and left thigh. There were five round or oval spots, 2 or 3 centimeters in diameter, where the hairs were shorter, broken and partly off. On these places the hairs were short, of a dull color, greyish, and under them the epidermis was covered with grey, dry scales, forming a very thin crust. In examining the hairs, it was found that the roots were enveloped from their base up to their point of exit with a whitish covering and when they were placed under the microscope the hairs were seen without root, broken in their follicle and the white cover which surrounded them was found formed by spores, packed against each other, and presenting characters similar but slightly different from those of true favus. It was a true case of Porrigo by the Microsporum of Gruby, affection which the authors believe is contagious to men, cat, dog and probably to cattle.—(*Annales de Belg.*)

Contagious Abortion in Cattle causes an annual loss of $3,500,000 in the State of Wisconsin alone is the conservative estimate of careful observers, according to the *Press Bulletin* of the University of Wisconsin. The veterinarian of to-day is surely facing serious problems; none more so than this one.

Most Scientific and Practical Veterinary Periodical Published.—A subscriber in Vancouver, B. C., in renewing his subscription, writes: You have the most scientific and practical veterinary periodical published. As has been said: "May your shadow never grow less." May this year beat all records for you, so that you may feel your efforts have been crowned with success.

CORRESPONDENCE.

Washington, D. C., March 5, 1914.

Editors, American Veterinary Review, *New York.*

If possible, I would appreciate it if you could use the enclosed letters, one from the Hon. J. B. Moore, Counselor of the Department of State, and the other from Prof. Miessner, Director of the Hygienic Institution of the Veterinary High School in Hannover, for publication in your next issue. These letters indicate the wonderful advantages the party is to receive from the authorities, as well as from our professional brethren abroad.

Very sincerely,

Adolph Eichhorn.

Enclosures.

(Copy.)

February 2, 1914.

Dr. Adolph Eichhorn, Secretary, National Committee of the United States, Tenth International Veterinary Congress, Department of Agriculture, Washington, D. C.

Sir—The department acknowledges the receipt of your letter of the 12th ultimo, in which you request that certain diplomatic officers of the United States in Europe be instructed to extend to a party of veterinarians who propose to tour Europe in connection with their attendance at the Tenth International Veterinary Congress to be held at London in August next such assistance as will assure the party all desired attention and courtesies.

In compliance with your request the Department has instructed its diplomatic officers in Austria-Hungary, Belgium, France, Germany, Great Britain, Italy, The Netherlands and Switzerland to extend to the persons making the tour such assistance as may be consistent with their official duties. I am, sir,

Your obedient servant,

For the Secretary of State,

(Signed) J. B. Moore, Counselor.

(Translation—Copy.)

DR. ADOLPH EICHHORN,
U. S. Bureau of Animal Industry.

MY DEAR COLLEAGUE—Through the various publications I have been informed that the American colleagues contemplate a travel tour of the various countries of Europe at the occasion of the Internantional Congress. We greet this project and it will afford us in Germany the especial honor of showing to our dear colleagues our institutions and the results of our research as far as possible. In order that they may be supplied everywhere with proper guides, which is absolutely necessary for such an undertaking, I would suggest that you prepare an accurate itinerary and send the same to me. I will then take the necessary steps to have your plans brought sufficiently to the attention of the proper authorities. At the same time, as acting member of the faculty of the Veterinary High School of Hannover, I would express the request of having your party visit our establishment, which is most modernly equipped, and you should not pass it in your round trip.

In hopes of receiving a detailed reply from you at an early date, I remain, with colleagual greetings,

Sincerely yours,

(Signed) Meissner.

Fargo, N. D., February 7, 1914.

To the AMERICAN VETERINARY PROFESSION:

THE LONDON CONGRESS AND CONTINENTAL TOUR.—Americans have been so busy with the building of a great nation that they have had little or no time to concern themselves very much about what other people were doing and in consequence have not always been able to fully realize that the march of progress in the old world has also been going on.

In addition to this factor, the broad expanse of ocean separating us from other peoples has more or less isolated us and exposed us to the danger of becoming self-centered.

Europeans, on the other hand, always have had the opportunity to see what their neighbors were doing. The short distances made travel from one country to the others possible for great numbers of people and as a result they became acquainted and could profit at first hand, by one another's achievements.

This has been the case with the veterinarians not less than with other professions, and this factor certainly contributed as much as any other to the splendid achievements of our European colleagues.

Science knows no boundaries, knows no nationalities; it is something of all men and for all men, and with this in view the scientific professions have always striven for a certain degree of international solidarity. Among those professions ours also has long felt the need of meeting our fellows from other lands face to face to discuss with them our various problems, to organize ourselves for professional advance and to strengthen the faith in our work.

This need for exchange of opinions, for meeting our colleagues of other nations and the desire to show the world of science that the veterinarian also has to be reckoned with, brought about the periodic gathering of veterinarians from all over the world under the auspices of the International Congress of Veterinary Medicine.

This year will again witness such a congress. As already announced, it will meet in London during the early part of August.

The fact that it meets in an English-speaking country should be an additional reason for a large American attendance. But even without this, we believe that the time has come for American veterinarians to join in the efforts undertaken by the International Congress.

Ours occupies a prominent place among the nations and this profession of ours should take its part in maintaining that place by representing our country when the veterinarians of the world gather in conference for the sake of progress and advance.

At the coming congress there should be a liberal sprinkling of North-Americans, while the membership list should certainly contain a great many names from this side of the Atlantic.

No doubt, many of us will not have the time to make the voyage, but this should not be a reason for not giving the London Congress a most liberal American support. The three or four volumes of printed proceedings alone are worth many times the amount of the membership fee, as the papers and discussions often constitute expressions of the best opinions on topics and problems of the greatest interest to us all.

And what a glorious opportunity is offered to those who can attend, when we consider the tour on the continent organized

by Dr. Eichhorn. Without mentioning the charms of European travel, without mentioning the broadening influence of such travel, the thought alone of a body of American veterinarians visiting the great veterinary centers of Europe impels itself upon one as something of the greatest importance to our own professional progress.

The participants of this trip will, upon their return, bear me out, when I state, that Europe offers us a great many valuable lessions, which we may take to heart without being less American for it.

The magnificent veterinary institutions, the great clinics and the splendid laboratories will be a revelation as well as an inspiration to many, and the fact of having seen them in operation cannot be without its influence upon our own advance.

The greater part of the itinerary projected by Dr. Eichhorn is known to me by personal observations, and I must admit that a better one could not have been devised. It takes the traveler not only to the best of veterinary Europe, but it offers likewise a most glorious opportunity for seeing the most splendid things which Europe can offer to its visitors.

And last but not least, the trip is organized especially for the comfort of those not accustomed to European travel. With Eichhorn as a guide, a competent interpreter will always be on hand to help out those who are not familiar with the continental languages, and the fact that this interpreter is a veterinarian himself will add materially to the pleasures and profits of the trip, not to speak of his pleasant personality. Where Eichhorn's smile lights the way, a good time is as good as guaranteed.

Both congress and continental tour should especially appeal to us and here's hoping that many will avail themselves of this opportunity.

L. Van Es,
Chairman, National Committee of the United States.

Baton Rouge, February 23, 1914.

Editors, American Veterinary Review, *New York.*

The European Tour.—Few opportunities present themselves to veterinarians on this side of the Atlantic to visit the great State schools and other institutions of allied nature on the European Continent, and the prospective tour previous to, and in connection with, the Tenth International Veterinary Congress in London next August should certainly be availed of by everyone

who can conveniently make the trip. In fact it will repay anyone, even although he may be put to some little inconvenience, as such an opportunity may never occur again within the lifetime of those who may now have it within their power to go.

Of course the International is of itself sufficient incentive, but when there is the added opportunity of visiting the old and well-equipped Continental and other schools, from old Lyons down, and the various hygienic institutions of the Continent as well, the trip should be doubly tempting, and is the chance of a lifetime to see personally what is going on professionally in the old world.

As an educational opportunity for the veterinarians of North America, this tour could not possibly be surpassed, especially as all, or the great majority, of those making the trip will be of the same profession and will be in a position to visit and discuss together things which they see, and which are of mutual interest.

Besides, there is nothing like rubbing up against others in other countries and seeing what they are doing to broaden one's conception professionally. In the absence of this wider viewpoint, one is very apt to become contracted in one's notion of things and imagine that the world hinges around our own little bailiwick.

To mix with the profession in other countries has the tendency to "relax" this idea and make us realize that other parts of the world are doing things as well as ourselves. To be able to draw comparisons from actual observation is an excellent thing; and even if after all we should find that matters, professional, in Europe are not ahead of us on this side of "the pond," we get the satisfaction of knowing, having seen them for ourselves, that such is really the case.

Many similar tours have been made by men in other professions and lines of work, and the general concensus of opinion has been all in their favor educationally, in addition to the pleasure of the trip itself.

It is to be hoped that as many as possibly can may take advantage of the coming European tour. The expense is extremely reasonable; the educational value is beyond computation; and the sight-seeing feature a rare opportunity.

W. H. Dalrymple, M.R.C.V.S.

Stony Point, N. Y., February 27, 1914.

The Editor American Veterinary Review, *New York City.*

The time has come to compile a ready reference book on *What Not to Do.* Such a work may or may not presuppose a

veterinarian's knowledge of what to do, but should precisely point out all those things that must not be done.

Notwithstanding the thoroughness of our training, there is not a practitioner who fails to have cases that require treatment which has not come to his notice before—either in books or otherwise. It is particularly for these cases that a ready reference book would be invaluable.

Now if there were such a book, conveniently arranged, with all the things that should *not* be done clearly set forth with reasons, it is plain that one would be in a far better position to know just what to *do*.

No doubt there are some among us who will content themselves with saying that we were supposed to have learned all this at college. I reply yes, but this particular subject has been very much neglected. A great many domestic animals, man included, are dosed into the world and dosed out of the world. The same can be said of surgery in using the knife. A practitioner should use as much judgment in withholding drugs from his patients as he uses in employing them. The same judgment is needed to prevent hasty and unnecessary operations. The most proficient must admit that there is too much uncertainty about the outcome of our impromptu treatment.

If there is such a book published as I have just described I shall greatly appreciate it if some one will let me know where to obtain it.

Yours very truly,

ROLAND T. KING, D.V.S.

Pioneer, Ohio, March 8, 1914.

Editor, AMERICAN VETERINARY REVIEW, *New York*.

DEAR SIR—I would like to ask through your columns if any one of your readers have found a satisfactory deodorant for removing scent from hands and arms after removing a retained placenta or a putrid lamb, calf or colt.

Yours very truly,

CHAS. F. WOLF, D.V.M.

NOTE—We have found aromatic spirits of ammonia very valuable in removing offensive odors from the hands and arms. After thoroughly washing, pour small quantity in palm of hands and rub it over hands and arms and allow it to evaporate. If well saturated the odor will disappear. That has been our experience in a city practice, where of course we have had no opportunity of applying it in the conditions cited above; but believe if the hands and arms are thoroughly washed and the nails thoroughly scrubbed out with a brush, the liberal use of aromatic spirits of ammonia will be effectual there also. We shall be glad if some of our readers in country practices will answer Dr. Wolf's question.—[EDITOR.]

ARMY VETERINARY DEPARTMENT.

DEATH OF ONE OF THE AGED ARMY VETERINARIANS—APPRECIATIVE TRIBUTE TO HIS LIFE.

The *Kansas City Star* of Tuesday, February 4, 1914, reported the death, in his sixty-sixth year, at 3418 Wayne avenue, that city, of Dr. W. H. McKinney, for ten years Veterinary Inspector of Meats for the Subsistence Department of the army, and for two years, since the amalgamation of the Subsistence, Pay and Quatermasters Departments, for the Quartermaster Corps. Dr. McKinney graduated at the Chicago Veterinary College in 1888, and was amongst its earliest students, following to the college his cousin, Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, who graduated in 1886. For a time he served as veterinary inspector of the Bureau of Animal Industry; but his best work was done for the Subsistence Department of the army at Kansas City. After the subsidence of the Spanish War Meat Scandal in 1901, he was one of the first two men (Dr. C. W. Johnson being the other) to be transferred from the Bureau of Animal Industry, and he was placed in the thriving packing center of the Missouri Valley to supervise the preparation of all army meat supplies there, as a preventive of the renewal of conditions which might lead to further scandalizing of the army.

Dr. McKinney was known by many packing house men in Kansas City, with whom he came in contact, as an unquestioned expert in his work. So faithful, loyal, conscientious was he that never in all those twelve long years that he served under the series of strict purchasing officers, like Majors Stivers, Lawton and Grove, was he ever criticized, or the products prepared under his supervision found seriously at fault. Kansas City ranks next to Chicago as a meat purchasing centre for the army, and probably during his service as much as fifty million pounds of meats passed through his hands, representing millions of dollars of money from the subsistence appropriations for the army. Yet in the handling of these supplies, Dr. McKinney was found faultless.

He was a quite man, never showy, noisy, or wishful to draw attention to himself. But he was stout-hearted, a man of sinewy character; drastic and brusque of speech when duty demanded it. Though he was a civilian, thus never in the military establishment,

he was a man of military bearing, square, straight, firm of step, striking his heels hard and sharp on the sidewalk like the wilful man he was. His strong figure, his firm step, his bearing, his penetrating eyes told those with whom he dealt for the army that here was a man not to be trifled with. It was the work of such men as Drs. McKinney and the late C. W. Johnson, the first civilian veterinarians appointed to the Subsistence Department of the Army, that brought the veterinary profession into favor with the commissioned subsistence officers of the army and who made army meat inspection a perpetuity of that service. Small wonder is it, therefore, that the high-ranking officers of the supply division of the Quartermaster Corps favor the commissioning of their meat inspectors. Good work has won its way, and it has won it through the careers of these pioneers in this branch of work for the army, Drs. McKinney and Johnson.

In the last few years of his life Dr. McKinney had the keenest interest in the Army Veterinary Service Bill. Only two weeks ago, though because of weakness of the heart he could only sleep in a half-sitting posture, he took his pen and wrote me of his confidence that the bill would pass in the present session of Congress, and he supported it in every way in his power. Sixty-four is the age of enforced retirement for army officers, and, as he was past sixty-five, it was his hope that when the bill passed he would be commisisoned and immediately retired. His death prevented this hope from realization. But it has a lesson for us, the living—it is that we as a profession should well consider and bear in mind, when pushing this measure on which our hearts are set, the aged men who for many long years have given their lives to principle, whose whole nature has gone into the conviction that their professional work for the army, though it might be unnoticed, would, if done with conscience, bear fruit in full appreciation of those who followed after them.

When the Army Veterinary Service Bill passed the House on the unanimous consent calendar January 6, 1913, on account of the objection of Republican Floor Leader James R. Mann, the retirement clause of the bill was struck out. If the bill had finally passed at that time in that form, this aged servant of the Government of whom we write would, because of age and consequent physical infirmity, have been thrown out of the service without retiring rights. We must not permit this raw injustice and must not allow ourselves to push the bill regardless of such men as Dr. McKinney, and, I believe, two other men of the Quartermaster Corps, U. S. Army, still on duty, though older than he was.

The retiring clause of the bill is an essential part of its fabric. To the glory of Dr. McKinney be it said that though Congress so mutilated the bill of January 6, 1913, he still had faith that justice would finally prevail and he unhesitatingly supported the Hay Veterinary Corps Bill H. R. 4541.

If we adapt the words of Lincoln, the last lesson from his life for us, the living, is to be dedicated anew to the unfinished work which he fought for and assisted so far nobly in advancing. It is for us to be dedicated to the great task remaining before us —that from our honored dead we take renewed devotion to that cause for which he gave the last full measure of devotion; that we here highly resolve that an army veterinary law, just and merciful, shall be passed which will give prowess to the young men serving our country, dignity to our men in maturity, and show consideration for our men bowed down under the burden of years, holding in remembrance the passing of the man who has just gone to his long home while the mourners uphold his faith in the cause uppermost in his mind when he departed.

GARRISON STEELE, M.D., D.V.M.

A LITTLE OF THE WARMTH OF HUMOR FOR OUR CAMPAIGN.

Let us not look glum. Keep good-natured. Keep smiling. Committees are committees. They must do their work. Committee work to us is torture as it delays movement.

VEST POCKET ESSAYS, BY GEORGE FITCH.

Committees.

A committee is a cold storage warehouse for business. There are over ninety-million committees in this country, of one kind or another. They hold several meetings each per year. At these meetings enough talking is done to sweep the entire State of Texas with a devastating cyclone of carbon dioxide. Sometimes a committee will also do some work, but only when there is nothing more to talk about.

Committees are a great convenience. It would be impossible to end any business meeting without appointing a committee, for in this case the meeting would have to do the business itself. After a man has managed a few hundred public meetings he can't

get his furnace banked at night in his home without appointing himself a committee to attend to the matter and report at some future meeting.

There are many kinds of committees, including executive committees, committees of the whole, committees of one, finance committees and standing committees. There are also legislative and congressional committees. The business of these last two committees is to sit on new legislation with all the fervor and patience of a hen trying to hatch a granite doorknob. After a man has served on legislative committees for a few years he can't attend to his furnace at home at all. He refers it to a committee, kills the bill and his wife has to do it.

Committees are composed of two parts—the chairman who does the work, and the members who get their names in the newspapers. The committee habit has the nation firmly in its grip and the only way to avoid being appointed on a dozen a year is to attend all possible meetings and refuse in a loud, impressive tone of voice on the plea of important business affairs.—*(Chicago Record Herald.)* G. S.

PERIODICALS RECEIVED AT THE REVIEW OFFICE.

Semi-Monthly Bulletin—Live Stock Sanitary Board (Penn.)
Bulletin Washington State Agricultural College.
Canadian Medical Association Journal.
Quarterly Bulletin—Chicago Veterinary College.
The Bacterial Therapist.
The Veterinary Journal (London).
The Live Stock Journal.
The Pacific Dairyman.
Hoards Dairyman.
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Very Helpful to Him in His Profession.—The Assistant State Veterinarian of Nebraska says in renewing his subscription to the Review: I find your paper very helpful and interesting to me in my profession.

BIBLIOGRAPHY.

PRODUCTIVE HORSE HUSBANDRY.

PRODUCTIVE HORSE HUSBANDRY. By Carl W. Gay, D.V.M., B.S.A.; Professor of Animal Industry, School of Veterinary Medicine, University of Pennsylvania; Director of Horse Breeding, State Live Stock Sanitary Board, Commonwealth of Pennsylvania. More than 300 pages, with 173 illustrations. Philadelphia and London. J. B. Lippincott Company. $1.50.

This work, generously illustrated, is divided into four parts. Part I treats of *Structure and Function;* Part II deals with *Types and Breeds;* Part III considers *The Principles of Breeding;* and Part IV takes up *The Horse in Service.* The first part contains three chapters, the first of which is *The Horse—A Machine;* the second, *Conformation—The Structure;* and the third, *Way of Going—The Function.* Part II has eight chapters, which include *The Types of Horses, The Classes of Horses, The Breeds of Horses, Draft Breeds, The Heavy Harness Breeds, American Breeds, Pony Breeds,* and *Judging Horses.* One chapter, on *The Breeding of Horses,* constitutes Part III, and Part IV includes nine chapters, as follows: *Relation Between Horse and Master, The Feeding of Horses, Stables, Equitation, Vehicle, Harness and Saddle, Marketing and Shows, Transportation, The Mule,* and *The Motor as a Factor.* These headings *suggest* the great scope and purpose of the book, covering as it does every side of the horse question; but it is impossible to do justice to it in a description, as the illustrations add so much to its completeness. All breeds, types and classes of horses are depicted; horses pulling, horses walking, horses trotting in sulkies, horses under saddle, drafters trotting on the halter before a judging class, the trotter shown on the halter standing, saddlers standing with saddle on and saddle off, and many similar instructive portrayals. There are also 19 pages of excellent plates of the teeth, for studying the age. The author urges a systematic business-like plan in the horse industry, with a definite purpose in view, leading to more uniform results and greater profit. The markets must be closely followed, so as to keep in touch with the demand, then with intelligent application of breeding principles, produce what

the market requires. Indifference to market demands, he points out, is what makes the middle man get most of the profit, a condition that applies in horses more than in any other product. The work is at once scientific and practical. Dealing first with the mechanical structure of the horse as a machine, proceeds with the conformation and structure, and the gaits, which are naturally influenced by conformation, it follows with the types of horses, studying the breeds and classes in the field of utilization. In the latter field, showing illustrations, with foot-notes for ready reference, of practically every type in harness or carrying a rider. Floor plans and interior views of model work-horse stables are also shown. The illustrations in the mule classes also show them on the halter and in harness. In fact, this book, from the frontispiece in natural colors of a group of Percheron brood mares in a field of red clover to the last page is one continuous rich field of information on one of the most important and fascinating subjects with which veterinary science is allied. Horse breeding presents a field of industry in American agricultural pursuits without a peer; and as veterinarians are the logical leaders in solving breeding problems, the accepted zoötechnicians, whose function it is to direct the breeding of proper types of horses, not only by proper selection of individuals, but also by the proper blending of the food stuffs available, which spells economy not only in the *cost* of feeding, but in the *result* of feeding, they must apply themselves to the study of these problems so as to be worthy of such a responsible place in one of the greatest commercial interests of their country. At the end of each chapter, under the heading *Review,* the author has appended a number of questions applying to the matter discussed in that chapter, which makes the book peculiarly appropriate to the teacher and student of zoötechny, and also helps the general reader to digest the matter read, by asking himself the questions there set forth.

In short, *Gay's Productive Horse Husbandry* is a compilation of scientific and practical matter on the production, marketing and use of horses that is indispensible alike to teacher, student and practitioner. To the country practitioner it is an *essential* in acquiring the knowledge that is to help him fit himself for his daily work; to the city practitioner it is a *necessity* in effecting a greater fullness of his knowledge of types and classes; and to every veterinarian, no matter what branch of the work he may be following, it is a *source of pleasure* and *education* of which he should not deny himself.

The publishers deserve especial credit for their work in the

production of this book. Bound in cloth, sepia-brown, decorated in black and red, with a horse on the front cover and on the back, the paper is smooth, the type clear and sharp and the illustrations excellent.

New York City Department of Health Announces the establishment of the following clinics for the free administration of Pasteur treatment for the prevention of rabies:

All Manhattan and Richmond cases are to be referred to the Manhattan Clinic, Room 802, 149 Centre street, between the hours of 1 and 4 p. m. on week days, and to the Brooklyn Clinic, located at the Borough office, Fleet and Willoughby streets, on Sundays and holidays, between 10 a. m. and 2 p. m.

All Queens and Brooklyn cases are to be referred to the Brooklyn Clinic, between the hours of 10 a. m. and 1 p. m. on week days, and 10 a. m. and 12 noon on Sundays and holidays.

All Bronx cases are to be referred to the Bronx Clinic, located at the Bronx office, Third avenue and St. Paul's place, between the hours of 11 a. m. and 1 p. m., Sundays and holidays inclusive.

The Manhattan Clinic is in charge of H. E. Street, M.D.; the Brooklyn Clinic in charge of J. Curran, M.D.; and the Bronx Clinic in charge of F. Harrison, M.D.

The present Pasteur Clinic at the Research Laboratory, foot of East 16th street, Borough of Manhattan, will shortly be discontinued, and hospitals and dispensaries are requested to refer all cases for treatment to the clinics at the proper Borough office.

A Georgia Veterinary Writes: "Please find check for $3 for Review. I think it the best veterinary periodical published, and don't see how I could get along in practice without the Review."

SOCIETY MEETINGS.

ALABAMA VETERINARY MEDICAL ASSOCIATION.

The seventh annual meeting of the above association was held at Auburn, Alabama, in the College of Veterinary Medicine of the Alabama Polytechnic Institute. Dr. O. R. Eatman, as president of the association, made a strong plea for the veterinarians to work for an efficient veterinary practice law in the State. The primary object of which is to better control the practice of *veterinary medicine,* so that all the illegal and improper methods will be eliminated.

How to Prevent the Spread of Disease in the Shipment of Horses and Mules was the subject of a paper by Dr. J. S. Andrade. He considered that three (3) points were essential: 1. Efficient inspection. 2. Thorough disenfection of the sales stables. 3. Thorough disenfection of stock cars. Along this same line Dr. Bahnsen discussed *The Value of Inspection of Horses and Mules for Inter-State Shipment.* He argued that in many cases the inspection was a farce because the inspectors failed to do their duties. These papers were discussed by Drs. White, Jolly, Douglas, Roberts and Cary. Dr. Jolly stated that he considered the inspection of value and that they could be made more valuable by more thorough and closer inspection. Dr. White argued that a large number of the inspections were properly done and were consequently of great value in preventing the spreading of glanders and other infectious diseases.

Messrs. Jones and Smith, senior veterinary students, read a paper and gave an anatomical demonstration of *The Relation of the Facial Sinuses to Some Surgical Operations.* One of the chief points brought out by these students was the variability of these sinuses in two horses of the same age and the greater variability in these sinuses of horses and mules of different ages. From the sections of specimens of heads it is clearly demonstrated that in most instances it was not necessary to puncture or make an opening in the turbinated bones in order to drain the facial sinuses. It was pointed out that in all or nearly all cases that these could be drained by trephening the dependent parts of

the sinuses, making the opening very large, so that the fingers could be inserted and all partial bony partitions could then be broken down and thus permit complete draining.

Dr. N. S. Mayo, secretary of the A. V. M. A., gave a number of very interesting and valuable talks and one paper. He told veterinarians how they could help suppress and eliminate fake cure-alls and faked advertisements of cure-alls. He also read a paper on internal anteseptics, paying particular attention to iodine and its compounds, methylene blue, quinine, carbolic acid and salicylic acid. The doctor always entertained and instructed by his many good talks.

How and When to Use a Stomach Tube was the topic of a paper by Dr. I. S. MacAdory. This paper brought out a general discussion on colic, indigestion and gastritis, which was entered into by Drs. Jago, White, Mayo, Scully, Salter and Andrade.

The Differential Diagnosis of Black Quarter and Malignant Œdema was rendered by Dr. C. W. Ferguson. Drs. Mayo and White claimed that they had never seen a case of black leg in an animal over two and one-half years old. Dr. Mayo said that he had seen it in many sucking calves and it occurred mostly in fat cattle between the ages of six and eighteen months. He regarded it usually as a high-land disease rather than as an exclusive low-land disease.

Dr. Scully, of Georgia, gave a short talk on the differences between the ordinary practices in the north and in the south. Dr. G. A. Roberts, of North Carolina, gave a brief talk on the effects of feeding cotton seed meal to hogs and the use of iron sulphate to correct its destructive action. Dr. H. J. Douglas, of New Orleans, described his method of preventing and treating laminitis by the use of alum and adrenalin chloride. He advised two ounces of pulverized alum in capsule or ball and follow that with one ounce three or four times a day. He also advised that sometimes it was valuable to use adrenalin chloride. His method of treatment was for acute cases. He did not attempt to explain the physiological or therapeutic action of alum. All he claimed for it was the results which were usually good.

The next paper was on *Emphysema,* by Dr. C. A. Cary. He stated that emphysema was due to some obstruction of expiration leading on to raised intra-alveolar pressure, decreased capillary circulation, malnutrition of the air sacs and diminished elasticity of the alveolar walls. The obstructed bronchii may be due to narrowing of the lumen by spasmodic contraction or the muscles of the bronchials from nervous irritation, by inflamma-

tory thickening of the bronchial walls, by a viscid exudate in the lumen or by obstruction to expiration at the larynx or other parts of the air passages. The opinion was expressed that ordinary dust in well-cured hay had little or nothing to do as a cause of emphysema.

It was suggested that a chemical substance of some bacteria or fungus that was at its height during the curing process of hay acted through the nervous system either by way of the stomach or air passages and produces spasms of the bronchü. It was stated that it was wise not to confound dust irritants that excite or exaggerate the action of an established case with the real cause.

Dr. A. H. French gave a very interesting and instructive talk on distemper in dogs. There was a varied opinion concerning acquired immunity to dog distemper. Dr. French and Dr. Douglas claimed that they had seen several attacks in the same dog, while Dr. White stated that one attack in Tennessee gave permanent immunity.

The following officers were elected for the ensuing year: Dr. W. B. Nixon, Demopolis, President; Dr. J. S. Andrade, Hustsville, Vice-President; Dr. C. A. Cary, Auburn, Secretary-Treasurer.

Upon the adjournment of the Alabama Association a temporary interstate organization was formed. Dr. G. R. White, of Nashville, was elected President; Dr. C. A. Cary, of Alabama, was elected Secretary-Treasurer. The object of this association was to discuss ways and means by which the southern veterinarians could make the New Orleans meeting a success. Dr. F. J. Douglas, of New Orleans, first discussed the subject of the clinic. He stated that arrangements had been made with the Exposition Association to hold the clinic in their auditorium. He also stated that the veterinarians in New Orleans would have ample clinical material.

The next subject discussed was that of new members from the south. It was decided that each southern State association and each member of the American Veterinary Medical Association in the south should round-up all the available and qualified veterinarians in the south and get them to join the A. V. M. A. at the New Orleans meeting.

The next topic for discussion was the financial one. Dr. G. R. White suggested that each state association should be called upon to contribute and each member of the state associations should likewise be requested to contribute. It was next decided

that the funds subscribed by the various States in the south should be put in a bank in each State, subject to the call of the committee in charge of the entertainment at New Orleans.

As a result of the discussion the following committees were appointed: 1. Finance, Dr. G. A. Roberts, of Raleigh, N. C., Chairman. 2. Membership & Publicity, Dr. G. R. White, of Tennessee, Chairman. 3. Entertainment, Dr. C. R. Jolly, of Atlanta, Chairman. 4. Transportation, Dr. C. A. Cary, of Alabama, Chairman.

These committees are to confer with the various State associations and local committees and arrange for the entertainment at New Orleans.

This temporary Association of Southern Veterinarians adjourned to meet in New Orleans one to two days ahead of the American Veterinary Medical Association.

The second night of the meeting, March 6, the Veterinary Medical Association of the Alabama Polytechnic Institute entertained all the visiting veterinarians at a banquet in Smith dining hall. There were about 125 in attendance at this banquet and all in attendance voted it a great success and the visitors extended their most hearty thanks to the veterinary students for this most hospitable and social occasion.

The last day was devoted exclusively to clinic at the Veterinary College of the Alabama Polytechnic Institute. This clinic began at nine a. m. and lasted until 5 p. m.

Dr. G. R. White, of Tennessee, first gave two demonstrations in castration. He castrated a five year old stallion standing and then a two year old stallion restrained by his special method for restraining colts. Drs. Jolly, Dean and Bahnsen next examined three cases of fistulous withers. Dr. Jolly operated on one of these which had a deep cavity, running downward and forward anterior to the first one or two dorsal spinous processes. He opened this cavity at its lowest point anterior to the upper third of the scalpula. He advised drainage by use of the seaton or drainage gauze.

The next case was one of lameness, the diagnosis of which was made by Dr. A. J. Douglas. Some dispute arose as to the correctness of the diagnosis and Dr. Douglas anesthized the parts with cocaine and proved that he was correct in attributing the lameness to ring bone.

A case of chronic emphysema was exhibited and diagnosis made by Dr. Jago of Athens, Ga. Dr. Mayo suggested that this case be treated by the arsenic-atropine method.

A case of dumb rabies in a bull pup was exhibited by a senior veterinary student, Mr. Willbanks. This pup exhibited paralysis of the lower jaw, inability to swallow and the characteristic expression.

A case of bastard strangles in a five-year-old mare that was in the veterinary hospital was exhibited. This mare had a post pharyngeal and sub-parotid abscess. This abscess had been opened by way of virbogs triangle, drained and flushed and kept open by antiseptic gauze.

An obscure case of lameness in a mule was the subject of much discussion by Drs. Roberts, Salter, Jolly, Bahnsen and Douglas. It was finally decided that the case should be treated for muscular trouble in the post-brachial region.

A suppurating, schirrus chord in a mule was removed by Dr. C. A. Cary. The animal was restrained by Dr. White; the large chord dissected out up to the external inguinal region and cut off by an encraseur. The cavity was packed with sterilized gauze held in place by stitching up the wound with continuous suture.

A cryptorchid hog was castrated by Dr. G. R. White. This hog was hung up by the hind limbs and the opening made into the abdomen a little to one side of the median line. With the hog in this position, Dr. White claims that the abdominal organs are, by gravitation, dropped out of the way.

Following this Dr. White inoculated twenty hogs by the simultaneous method as practiced in Tennessee for the production of permanent immunity to hog cholera.

By the use of a college " Sub," Dr. C. A. Cary illustrated the roaring operation with the animal standing. This operation was done with the use of cocaine injected subcutaneously over the laryngeal region and the cocaine was applied by cotton to the mucosa in the ventricle. The animal suffered no pain or irritation during the operation.

A horse was next presented to the clinic which had been operated for paralysis of the penis. Dr. Cary had removed a six-inch cuff of the prefuse and this held the penis so that only about three inches of it extended beyond the opening of the sheath. He should have removed two inches more of the prepuse and left the penis protruding only one inch from the sheath.

Dr. P. F. Bahnsen, of Georgia, gave a very fine and interesting demonstration of his method of casting and restraining animals by means of a single rope. He put the mule in position for castration, for single foot operation, etc.

Three mules were exhibited to show the results of low teno-

tomy or cutting the flexor tendons below the fetlock for contraction of those tendons. In each case the results were permanently good.

C. A. CARY,
Secretary-Treasurer.

NOTE.—The foregoing secretary's report was received after Dr. Mayo's report was in type; so we have given our readers the benefit of both reports. [Editor.]

ALABAMA VETERINARY MEDICAL ASSOCIATION.

The seventh annual meeting was held in the Veterinary College of the Alabama Polytechnic Institute at Auburn on March 5, 6 and 7, 1914. While the attendance of veterinarians was not large, an exceedingly interesting and practical meeting was held. The veterinary students attended all meetings and assisted at the clinics.

President Thatch of the college welcomed the association with an inspiring address. Dr. Peter Bahnson, State Veterinarian of Georgia, discussed the question of "Inspecting Horses and Mules for Inter-State Shipment." The requirement of some States for a veterinary certificate of health for all horses and mules coming into the State brought out a vigorous discussion.

Dr. Jolly, of Atlanta, contended that a careful veterinary inspection was more important to the shipper than to the State, as it should prevent shipping horses suffering from shipping fever that frequently caused heavy losses to the shipper.

Dr. Andrade read a paper on "How to Prevent the Spread of Disease in Shipping Horses and Mules," in which he advocated a careful inspection and vaccination with strepto-bacterins of all animals before shipping.

Dr. Ferguson read a paper on "Differential Diagnosis of Black Quarter and Malignant Odema," and Dr. I. S. McAdory told in a practical way "How and When to Use the Stomach Tube." Dr. C. H. Cary presented the subject of "Emphysema" and urged a more thorough scientific study of this common disease, particularly as to its pathology. This subject was discussed by various veterinarians. It seemed to be the opinion that this disease has been much neglected by veterinarians.

Messrs. W. B. Smith and J. K. Jones, veterinary students, presented the subject of "The Facial Sinuses and Their Relation to Surgical Operations," and illustrated the subject with a finely prepared set of specimens. Dr. A. H. French read a paper on "Distemper in Dogs" that was very practical and created a

good deal of discussion. Dr. N. S. Mayo read a paper on "Internal Antiseptics."

The Inter-State meeting was devoted largely to the coming meeting of the A. V. M. A. at New Orleans. Dr. F. J. Douglas, of New Orleans, was there and told of the plans for a clinic.

Drs. Geo. R. White, of Tennessee; G. A. Roberts, of North Carolina; and C. A. Cary, of Alabama, told what was being done to make the New Orleans meeting one that the whole South would be proud of. Everything indicated a large and very successful meeting at New Orleans next December.

The clinic at the meeting was one of the finest ever attended by the writer. There was a great variety of subjects, and with such artists as Cary, Jolly, Bahnson, George White, French and others to instruct, it made a clinic second to none in interest and practical results. N. S. M.

VETERINARY ASSOCIATION OF MANITOBA.

The annual meeting of the above association was held at Brandon March 4, 1914, President E. P. Westell in the chair. There was a large attendance of members.

The minutes of last meeting were read and adopted. Reports were presented by the secretary. The financial statement showed a satisfactory balance on hand, and members expressed pleasure in the fact so reported. The registrar reported the following, who had been registered after passing the prescribed examination: C. A. Mack, 1902; F. M. Schnell, 1913; E. L. Houck, 1913; C. W. Johnston, 1913 (McKillip Veterinary College); J. H. Dann, 1913; A. W. McCaskill, 1913; G. A. Bowman, 1913; J. A. Leadbeater, 1913; G. K. Hobson, 1913; H. R. McEwen, 1913; J. F. Skinner, 1913 (Ontario Veterinary College).

An invitation was extended by the Police Magistrate Bates, president of the Kennel Club, to attend the Dog Show taking place that day in Brandon, the first bench show of its kind held in Brandon.

The election of officers resulted as follows: For executive committee, Drs. Hilton, Westell, McGilvray, Robson, Coxe, S. T. Martin, Lee; president, Dr. Lee; vice-president, Dr. Martin; secretary treasurer, Dr. Hilton; board of examiners, Drs. McGilvray, Westell and Hilton. President Lee, taking the chair, thanked the association for the honor done him. He hoped he would be able to fill his office, though he did not feel he could do so as well as it had been done in the past.

Dr. Part read a paper on "Obstetrics," and after discussion took place it was decided to hold the next semi-annual meeting in Winnipeg at the time of the Exhibition. The auditors were re-elected and the meeting adjourned.

During the afternoon the members of the association attended the dog show and then spent a very interesting time at the Fat Stock Show, ending up the day at a banquet held at the Cecil Hotel, as guests of Drs. Coxe and Robinson.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

On March 3 and 4, while the state was enveloped in the heaviest blanket of snow it has known for many years, the veterinarians of Pennsylvania convened in Philadelphia to enact the programme of the 31st annual meeting of their organization. And while the road conditions were such as to make it impossible for a great many to attend (practically holding them in their houses in some sections), still the attendance was good, and the meeting a successful one in every respect. Representation of all committees were in attendance, so that committee reports were given according to program, and only about four papers from the large and attractive program were not presented. Eleven new members were elected, six from outlying cities and five from Philadelphia. The following officers and trustees were elected for the ensuing year:

President, H. B. Cox, Philadelphia; vice-presidents, Thomas Kelly, Philadelphia; R. M. Staley, Harrisburg; P. K. Jones, Pittsburg; treasurer, R. F. Bridge, Philadelphia; corresponding secretary, John Reichel-Glenolden; recording secretary, E. H. Yunker, Philadelphia.

Board of Trustees: C. J. Marshall, chairman, Philadelphia; F. H. Schneider, Philadelphia; L. A. Klein, Philadelphia; J. W. Sallade, Auburn; C. W. Springer, Uniontown.

MONTANA VETERINARY MEDICAL ASSOCIATION.

Resolutions Passed at Last Regular Meeting in Bozeman: We the members of the Montana Veterinary Medical Association, assembled in regular mid-winter session, realizing the present inefficiency of the organization of the U. S. Army Veter-

inary Service, do unanimously recommend the following resolutions:

Resolved, That we do indorse H. R. No. 4541, known as Army Service Bill, which is now before Congress, for the reasons that it provides for greater service to be rendered by the army veterinarians to our country; that it renders possible more efficient service, by them, to the army; that it makes provision for the proper rank and professional standing, which their training and entrance requirements into the army service demand; and finally tha tit makes provision for the retirement and care of the army veterinarian after he has spent all of his useful life in the service of his country.

Resolved, That copies of these resolutions be forwarded to each member of both houses of Congress, from Montana, under the seal of this association, signed by the president and secretary, and that they be requested to use their good offices for the passage of this bill.

Dated at Bozeman, Montana, this 27th day of January, 1914.

H. Welch, *President.*
A. D. Knowles, *Secretary-Treasurer.*

B. A. I. VETERINARY ASSOCIATION OF CHICAGO, ILL.

The seventh annual banquet and dance, to which invitations were extended to all members of the force stationed at Chicago, Ill., was held Saturday evening, February 14, 1914, at the Saddle and Sirloin Club.

Dr. V. A. Moore, director of the New York State Veterinary College, Cornell University, was the guest of honor, and the principal speaker of the evening. His topic was "The Veterinary Inspector and His Problems."

Other speakers were: Dr. S. E. Bennett, inspector-in-charge Bureau of Animal Industry, Chicago, Ill., who spoke on "Friendship"; Dr. L. Enos Day, "The Ladies," and the president of the association, Dr. A. L. Faunce, "Our Association." Dr. A. M. Casper was toastmaster.

The banquet was followed by a dance greatly enjoyed by all present.

This was the first time ladies graced our banquet board. This innovation was voted a success and the banquet the best ever.

The following officers were elected at the regular meeting, February 13: Dr. A. L. Faunce, president; Dr. C. L. Norris, vice-president; Dr. B. J. Stocler, secretary and treasurer.

NOTE—A news item on this meeting appeared in our March issue, page 735.

ARKANSAS VETERINARY ASSOCIATION.

The seventh annual meeting of the above association was held on February 16 and 17, 1914, at Ft. Smith. The meeting was called to order by Dr. J. F. Stanford, president; roll call by Dr. J. B. Arthur, secretary. The opening address was delivered by Mayor H. C. Reed. After the regular routine of business several interesting discussions were taken up in regard to eradication of the Texas fever tick, hog cholera and glanders.

The second day was devoted to a clinic which was held at Dr. X. G. May's hospital, where a large number of both major and minor operations were performed by the attending veterinarians.

The officers elected for the coming year were as follows: Dr. J. B. Arthur, president; Dr. X. G. May, vice-president; Dr. R. M. Gow, secretary and treasurer. The next meeting will be held at Little Rock, January 5 and 6, 1915.

R. M. Gow, *Secretary and Treasurer.*

Fayetteville, Ark.

YORK COUNTY VETERINARY MEDICAL ASSOCIATION.

The regular quarterly meeting of the above association was held at the National Hotel, York, March 3, 1914. Interesting discussions were had on "Capped Hocks in Horses and Mules," "Tetanus," "Azoturia," "Influenza," "Pneumonia and Pleurisy," and "Distemper in Dogs." Secretary Bausticker reported the society to be in a flourishing condition, and stated that there was not much evidence of contagious diseases throughout the county. The following officers were elected: President, Fred. Hartenstein, New Freedom; 1st vice-president, C. A. Kain, York; 2d vice-president, J. D. Smith, Dallastown; treasurer, M. H. Gladfelter, York; Secretary, E. S. Bausticker, re-elected. Next meeting June 2, 191.

E. S. BAUSTICKER, *Secretary.*

OBITUARY.

EDWARD I. CARTER, D.V.S.

Dr. Edward I. Carter, a native of Shropshire, England, died at Pittsburgh, Pa., Feb. 14, 1914, in the 65th year of his age. He graduated with highest honors at Montreal Veterinary College in 1881, then came to Pittsburgh, where he soon gained a large and lucrative practice, and retired New Year's Day, 1897. He soon suffered reverses and was reduced to penury, and never regained his former prestige or practice.

THOMAS B. HILLOCK, V.S.

Dr. Thomas B. Hillock died at his home in Columbus, Ohio, on March 4, 1914, at the age of 68 years. Dr. Hillock graduated from the Ontario Veterinary College in 1872. He was at one time state veterinarian of Ohio; was treasurer of the Ohio State Veterinary Medical Association, and member of the American Veterinary Medical Association. He was loved by all who knew him.

Dr. W. B. Lewin Dead.—Dr. W. B. Lewin, Russell, Ill., died in February. Dr. Lewin was an old subscriber to the Review, and we were grieved and surprised to learn of his death.

Veterinarian Killed in Automobile Accident.—Dr. A. J. Ransom, of Gainesville, Florida, was instantly killed by being thrown from his automobile as it collided with a mule on March 14. The doctor was thrown from the car, landing on his head and breaking his neck. He leaves a wife and one daughter.

Dog Tramped 2,000 Miles.—Footsore and almost starved, Bonnie, a 3-year-old Scotch collie, returned to his old home in Olathe, Kansas, after a weary tramp of 2,000 miles. In October, 1912, the dog was given away to be taken to a home in Southern Florida. He stayed there with his new owner for two weeks, but seemed to be discontented and would eat only occasionally. He left one night and nothing more was heard from his until he walked into Olathe sixteen months afterwards. His feet were sore and bleeding and the toenails were worn off.—(*Our Dumb Animals.*)

NEWS AND ITEMS.

RUSH SHIPPEN HUIDEKOPER.

A portrait of Dr. Rush Shippen Huidekoper, the first dean of the Veterinary School at the University of Pennsylvania, was presented to the University by Mr. Joseph G. Rosengarten, one of the trustees, and has been hung in the Faculty Room at the Veterinary School. The formal presentation was made by Dean Louis A. Klein at the Founders' Day exercises in the Academy of Music on February 23. Wasington's birthday being celebrated each year by the University of Pennsylvania as Founders' Day. We publish below the presentation address of Dr. Klein. Having enjoyed the privilege of a personal acquaintance with Dr. Huidekoper, and having been for a few years closely associated with that great veterinarian, we feel sure that there are many hundreds of veterinarians throughout the country who will enjoy learning through the splendid remarks of Dr. Klein, of the placing of his portrait in the Faculty Room of the school he founded, and having their memories refreshed on his professional career.

The Presentation by Dean Klein.

It is my pleasant privilege to present to the University this portrait of Dr. Rush Shippen Huidekoper, the first dean of the School of Veterinary Medicine.

Dr. Huidekoper was prepared for the medical profession at the University. Graduating with the class of 1877, he became a volunteer assistant to the late Dr. D. Hayes Agnew and had an opportunity to study the methods which had made that eminent surgeon famous as a teacher. He was engaged also in general medical practice, was a member of the staffs of the Children's Hospital, Philadelphia Dispensary and University Hospital, and for two years made a special study of pathology as coroner's physician. A fancier of animals, particularly the horse and dog, Dr. Huidekoper was naturally interested in veterinary medicine. Consequently, when he was asked to go abroad to prepare himself to organize the Veterinary School, which was then about to be founded at the University, he accepted the offer and entered upon the new field with characteristic energy and enthusiasm. He went to France and entered the Veterinary School at Alfort, from which he graduated in 1882 and then studied for a year in the laboratories of Virchow, Koch, Chauveau and Pasteur. Dur-

ing his stay in Europe he also visited nearly all of the important veterinary schools.

Upon his return in 1883, he supervised the construction of the first buildings for the Veterinary School at the University, which were erected at Thirty-sixth street and Pine, now Hamilton Walk. He also arranged the course of instruction. A leading feature of his plan was that the students should *do* as well as see and hear; that they should have an opportunity to learn the art as well as the science of veterinary medicine. Clinical instruction and surgical exercises were developed to an extent never before attained in America and considerable laboratory work and dissection were also provided for. The course was so broadly planned and future needs were so well anticipated that while the subjects included in the course by Dr. Huidekoper have been amplified and extended, it has not been necessary up to this time to add any additional subjects except those studies which have developed into separate subjects since the school was organized. Dr. Huidekoper held the chair of Theory and Practice of Medicine and was Pro-tempore Professor of Anatomy, but during the first two years of the school he gave instruction not only in these subjects but taught also histology and zootechnics, held clinics, conducted a very large practice, and edited a veterinary journal. His capacity for work was marvelous.

As a veterinarian he soon attained national prominence and did much work of service to the veterinary profession at large. He also wrote several books on veterinary subjects. In whatever position he was placed he rose above the mediocre, but he was at his best as a teacher. Blessed with an excellent memory and imbued with a thirst for knowledge that made him an industrious student, he was especially fitted for this work. His lectures were characterized by lucidity, methodical arrangement and precision of statement, and he possesed to a remarkable degree the power of awakening the enthusiasm and winning the regard of his students. His former students invariably speak of his kindly interest, of his great industry and enthusiasm and of the fullness of his knowledge. With all their added years of life and of experience they still have the highest regard for his ability and learning. Only a good teacher could stand this test.

Every student of Dr. Huidekoper's who yet lives, every alumnus of the veterinary school, every veterinarian who knew him, and all his other friends will feel deeply grateful to Mr. Joseph G. Rosengarten for presenting to the University this memorial of one who rendered such valuable and faithful service in the first years of the veterinary school.

Rules and Regulations for the Importation of Horses, Asses and Mules Into Rhode Island, In Effect On and After March 2, 1914.

Whereas, the disease known as glanders or farcy, which disease is contagious not only to horses, asses and mules, but to human beings, has, in the opinion of the Veterinarian appointed by the State Board of Agriculture of the State of Rhode Island, become prevalent in Rhode Island and the States bordering on said State, and in Indiana.

Now, be it known that by the power vested in the Rhode Island State Board of Agriculture by Chapter 119, Section 3 of the General Laws of Rhode Island, 1909, the following rules and regulations have been duly adopted by said State Board of Agriculture:

Section 1. All horses, asses and mules brought into Rhode Island from the States of Massachusetts, New York, Indiana and Connecticut must be accompanied by a permit upon which shall appear distinguishing marks describing such animal, issued by the said State Veterinarian of the State of Rhode Island; and the arrival of all such animals must be reported to the said Veterinarian within twenty-four hours after destination is reached, and they must remain in quarantine on the owner's premises and at the owner's expense until released by the said State Veterinarian.

Sec. 2. All horses, asses and mules so brought into this State from Massachusetts, New York, Indiana and Connecticut, having first passed an examination and an opthalmic mallein test, as recognized by the U. S. Bureau of Animal Industry, made by a competent veterinarian before shipment, and the certificate of health having been issued by such veterinarian and duly approved by the proper authorities having jurisdiction over the diseases of domestic animals of the State from which such shipment is made, may be released from quarantine by the State Veterinarian or his deputy. Such certificate shall contain a description of the animal examined by such veterinarian, together with distinguishing marks that appear on the same.

Sec. 3. All horses, asses and mules brought into this State, not accompanied by such health certificate as provided in Section 2 hereof, shall be examined by a veterinarian in such manner and such tests made as the State Veterinarian may direct, at the expense of the owner or owners, upon arrival in this State, and the certificate of health issued by such veterinarian shall be subject to the approval of the State Veterinarian before such animals are released from quarantine.

Sec. 4. All releases from quarantine will be issued by the State Veterinarian or some assistant to be approved by said Board of Agriculture. All horses, asses and mules found to be diseased will be killed as by law provided, the carcasses burned or buried or turned over to a rendering company for treatment in such a manner as not to menace the public health and will prevent a spread of the disease, and the premises disinfected at the owner's expense.

Sec. 5. The foregoing rules and regulations do not apply to horses, asses and mules that enter the State in their daily work or to such animals as are being transported through the State by common carriers aboard cars; but none of such animals while in transit shall, if unloaded for any necessary purpose, be permitted to go beyond the care and control of such common carrier.

Official Mallein Test for Horses: Order Number Four.

After March 15, 1914, the State of Colorado Will Adopt As the Official Test for Horses and Mules the

OPHTHALMIC-MALLEIN TEST.

This test has been adopted by the *U. S. Government* and a number of other States.

A book of instructions will accompany each letter and your attention to a careful reading of the instructions is asked.

Special attention is asked to the last page of this booklet, in which the new system of recording all tests are made.

All authorized veterinarians by me have had their names and addresses sent to every State *veterinarian* in the United States, and it will be necessary that every *mallein and tuberculin test* be recorded in my office by a duplicate chart.

There has been no change in the *tuberculin* test for *tuberculosis.* The *inter-dermal test* is not a recognized test but by one State and will not be accepted by the State of Colorado.

Any authorized *veterinarian* failing to record in this office a copy of all tests made will have his name struck from the authorized list of Deputy State Veterinarians for Inter-State testing, and notice to this effect will be sent to all *State veterinarians.*

The regulation tuberculin test must be made by all authorized veterinarians and in the application they sign upon which the authorization is based they agree to make all tests as per instructions of this office. If veterinarians do not care to follow these directions they can inform this office and be stricken from the list.

Dr. W. W. Yard,
State Veterinary Surgeon.

March 1, 1914.

SANITARY ORDER REGULATING THE SALE OF VIRUS FOR HOG CHOLERA: TO ALL MANUFACTURES OF HOG CHOLERA SERUM OR VIRUS WHO MAY WISH TO OPERATE IN THE STATE OF COLORADO.—As the *State Live Stock Sanitary Board* of the state of Colorado is given authority under the laws of the state to make such rules and regulations as are necessary for the eradication of any and all contagious and infectious diseases, the State Live Stock Sanitary Board has this day ordered the state veterinary surgeon of the state of Colorado to take such steps as in his judgment will control and eradicate the disease of cholera.

It is hereby ordered by the state veterinary surgeon that the sale or use of *virus* or *virulent blood* shall only exist under the following conditions:

All persons, firms or corporations wishing to sell or use virus must first obtain permission from the state veterinary surgeon, Dr. W. W. Yard, State Capitol, Denver, giving a thorough explanation as to conditions under which the blood is to be sold and used.

Only such veterinary surgeons as are graduates and hold state licenses as the state veterinary surgeon may authorize, shall be allowed to use hog cholera virus or virulent blood in the treatment of hog cholera in the state of Colorado.

All firms, corporations and persons interested in the welfare of the state and the public health are asked to cooperate with the sanitary authorities in every manner possible in order that hog cholera can be controlled in the state of Colorado.

D. W. YARD,
State Veterinary Surgeon.

Attest: E. MCCRILLIS, Secretary.

DR. A. D. KNOWLES RELINQUISHES HIS COUNTRY PRACTICE AND GOES INTO THE CITY.—Dr. A. D. Knowles, formerly of Livingston, Montana, has taken up his residence in Butte, that state, and will engage in city instead of country practice.

DR. MORGAN J. SMEAD, VETERINARIAN, has accepted a position in the Biological Laboratory of Parke, Davis & Co., Detroit, Mich. The doctor was formerly at Port Huron, that state. He concludes his letter advising us of change of address with: "I cannot afford to miss any copies of the REVIEW."

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n	Mar. 5-6-7, 1914	Auburn	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.	April, 1914	141 W. 54th St.	P. K. Nichols, Port Richmond, N.Y
American V. M. Ass'n.	Dec., 28-31, 1914	New Orleans, La	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n	January 5-6, 1915	Little Rock.	R. M. Gow, Fayetteville.
Ass'n Médécale Veterinare Française. "Laval"	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago	2d Fri. each month.	Chicago	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha.	3d Mon. each month.	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n	Monthly	St. Joseph and vicinity	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n	December 10, 1913.	San Francisco	John F. McKenna, Fresno.
Central Canada V. Ass'n.	Feb. and July	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n	June and Nov.	Syracuse	W. B. Switzer, Oswego.
Chicago Veterinary Society	2d Tues. each month.	Chicago	D. M. Campbell, Chicago.
Colorado State V. M. Ass'n	May 28-29, 1913.	Ft. Collins	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n.	Aug. 4, 1914	Waterbury	B. K. Dow, Willimantic.
Delaware State Vet. Society	Jan., Apl., July, Oct.	Wilmington	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.	3d Mon. each month.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n	2d week, July, 1913.	Rochester	J. H. Taylor, Henrietta.
Georgia State V. M. A.	Dec. 22-23, 1913.	Atlanta	P. F. Bahnsen, Americus.
V. M. A. of Geo. Wash. Un'y	1st Sat. each month.	Wash., D. C.	I. M. Cashel.
Hamilton Co. (Ohio) V. A.			Louis P. Cook, Cincinnati.
Illmo Vet. Med. Ass'n.	Mar. 26, 1914	Belleville, Ill.	L. B. Michael, Collinsville. Ill.
Illinois State V. M. Ass'n.	December, 1913.	Chicago	L. A. Merillat, Chicago.
Indiana Veterinary Association	Jan. 14, 1914	Indianapolis	A. F. Nelson, Indianapolis.
Iowa Veterinary Ass'n.	Pending	Pending	C. H. Stange, Ames.
Kansas State V. M. Ass'n.	Jan. 6-7-8, 1914	Manhattan	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.	Oct. & Feb. each year.	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n.	2d Tues. each month.	Philadelphia	Cheston M. Hoskins.
Lake Erie V. M. Association	Pending	Pending	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n.	Sept., 1914	Lake Charles	Hamlet Moore, New Orleans, La.
Maine Vet. Med. Ass'n.	April 8. 1914	Bangor	H. B. Wescott, Portland.
Maryland State Vet. Society		Baltimore	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.	4th Wed. each month.	Young's, Boston.	J. H. Seale, Salem.
Michigan State V. M. Ass'n.	Feb. 3, 4, 1914	Lansing	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n.	Jan. 14-15-16, 1914.	St. Paul	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.	Aug. 29, 1913	Starkville	Wm. P. Ferguson, Grenada.
Missouri Valley V. Ass'n.	Jan. 27, 28, 29, 1914	Kansas City, Mo.	Hal. C. Simpson, Denison, Ia.
Mississippi Valley V. M. Ass'n.	Semi-Annually—Call of Chair	Galesburg, Ill.	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n.	July, 1913	Kirksville	S. Stewart, Kansas City.
Montana State V. M. A.	Sept. 24, 25, 1913	Helena	A. D. Knowles, Livingston.
Nebraska V. M. Ass'n.	1st Mo. & Tu., Dec.'13	Lincoln, Neb.	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.	Sept., 1914	Rochester	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.	June, 1914	Wilson	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n.	Week of July 20, 1914	Fargo	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.	Nov. 1913	Delphos	E. V. Hover, Delphos.
Ohio State V. M. Ass'n.	Jan. 14, 15, 1914	Columbus	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.	Annually	Upper Sandusky.	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.			J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.	Fall, 1913	Oklahoma City.	C. E. Steel, Oklahoma City.
Ontario Vet Ass'n.	1st Week in Feb. 1914	Toronto:	L. A. Willson, Toronto.
Pennsylvania State V. M. A.	Mar. 3, 4, 1914	Philadelphia	John Reichel, Glenolden.
Philippine V. M. A.	Call of President	Manila	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.	4th Tues. each month.	Portland, Ore.	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.		Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.	Jan. and June	Providence	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns.	Pending	Pending	B. K. McInnes, Charleston.
South Illinois V. M. and Surg. Ass'n.	Aug. 4-5-6 1914	Salem	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors	1st Wed. fol. the 2d Sun. each month.	St. Louis	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.	June 17, 1914	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.		Philadelphia	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.	Pending	Madison	S. W. Allen, Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.	Jan., Apl., July, Oct.	Los Angeles	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp.	4th Tues. each month	407 Illinois Ave.	H. R. Collins, South St. Joseph.
Tennessee Vet. Med. Ass'n.	November. 1914	Nashville	O. L. McMahon, Columbia.
Texas V. M. Ass'n.	Nov., 1913	College Station.	Allen J. Foster, Marshall
Twin City V. M. Ass'n.	2d Thu. each month.	St. P.-Minneap.	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n.	Spring of 1914	Salt Lake City.	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n.			G. T. Stevenson, Burlington
Veterinary Ass'n of Alberta			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia	3d Wed. each month.	514 9th St., N.W.	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ.	1st Sat. each month.	Wash'ton, D. C.	J. M. Cashell, 2115 14th Street.
Vet. Ass'n of Manitoba.	Feb. & July each yr.	Winnipeg	Wm. Hilton, Winnipeg.
Vet. Med. Ass'n of N. J.	January 8, 1914	Trenton	E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City	1st Wed. each month.	141 W. 54th St.	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club.	Monthly	Jersey City	T. F. O'Dea Union Hill, N. J.
Virginia State V. M. Ass'n.	July 9-10 1914	Staunton	Geo. C. Faville, North Emporia.
Washington State Col. V. M. A.	1st & 3d Fri. Eve.	Pullman	R. J. Donohue, Pullman.
Washington State V. M. A.	June 18-19, 1914.	Walla Walla,	Carl Cozier, Bellingham.
Western Penn. V. M. Ass'n.	3d Thu. each month.	Pittsburgh	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad.	Feb. 10, 11, 1914	Milwaukee	W. W. Arzberger, Watertown
York Co. (Pa.) V. M. A.	June, Sept., Dec., Mar	York	E. S. Bausticker, York, Pa.

PUBLISHERS' DEPARTMENT.

Subscription price, $3 per annum, invariably in advance; Canadian subscriptions, $3.25; foreign countries, $3.60; students while attending college, $2; Students in Canada, $2.25; single copies, 30 cents in U. S. **Copy for advertisements should be received by 10th of month.**

Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address. **Make all checks or P. O. orders payable to American Veterinary Review.**

MISTURA ARGENTI COMPOSITA has changed the style of its ad. but the product has not changed. It remains the same dependable agent in the treatment of bone and joint lamenesses. See the new adv. on page 9, this issue.

ACCURACY LABORATORIES' NEW ADDRESS: Since March 1, the address of this Chicago house has been 1724-1726 Madison Street, as shown in the advertisement on page 1 (adv. dept.), of the previous and present issues of the REVIEW.

HOBDAY'S THIRD EDITION OF COURTNEY'S VETERINARY MEDICINE CAN BE OBTAINED FROM CHICAGO HOUSE. On page 767, March REVIEW, we reviewed the above-named book, referring to the London publishers. Soon after the publication of said review of the book we began to receive inquiries as to where it could be procured in this country, and are pleased to be able to tell our readers that the book is also published in this country, by the CHICAGO MEDICAL BOOK COMPANY, Honore and Congress Streets, Chicago, Ill., from whom we have since received a copy. Our review of the book in the March issue, referred to above, of course, applies also to the work as published by the Chicago publishers. Each publisher binding the book according to his own idea. The advertisement of this house appears on page 14 of the present issue.

AMERICAN VETERINARY REVIEW.

MAY, 1914.

EDITORIAL.

EUROPEAN CHRONICLES.

Paris, March 15, 1914.

MYOCLONY.—In their excellent dictionary of technic medical terms, Garnier & Delamare give the definition of this word as: *"Clonic muscular contractions, sudden, similar to the jerkings due to electric shock, involuntary, not systematized, more or less disseminated, and repeating themselves at various intervals. It is the principal symptom of various nervous affections."*

In a recent review written by Prof. Cadeac in the *Journal of Zootechnie* the learned writer says: "Under that name are designated syndroms characterized by clonic contractions, more or less rhythmical or irregular, of striated muscles, with or without displacement of the parts upon which these muscles are inserted. These contractions take place only on some muscles, corresponding to some nerves or again affect several parts of the body, often repeating themselves by isolated accesses, separated by intervals more or less long of perfect calm or again lasting for various lengths of time."

From this definition every one recognizes those various muscular manifestations which are most spoken of as chorea and are observed in all animals.

In solipeds all the striated muscles of the head, of the limbs and of the trunk, principally the diaphragm, may present those clonic manifestations.

In bovines, myoclony has frequently been observed, and described under the name of chorea.

In lambs a myoclony can be observed characterized by sudden convulsive jerkings, of irregular intensity, rhythmical, generalized or localized in the head and the extremities.

In young swine, the muscles of the head, legs and sometimes all the muscles of the trunk exhibit clonic rhythmical contractions in various regions, or in one region only.

With dogs, they are most commonly the sequelae of distemper and are closely connected with the myelitis improperly described under the name of chorea.

If in solipeds flat muscles, such as the masseters, or the crotaphites, are often the seat of fibrillary twistings or again of bilateral spasmodic closing and opening of the eyelids are observed, or again similar contractions are noticed in the cutaneous muscles, those of the face and extending to other parts of the body, to such an extent that the possibility of tetanus being present may be justified, because of their becoming generalized, there is one which is more peculiar because of its remaining localized, that is the myoclony of the diaphragm, although it is sometimes also connected with myoclony of the abdominal muscles.

* * *

Myoclony of the diaphragm is a syndron of no serious nature which, however, frightens those who see it for the first time. Known as spasms of the *diaphragm, clonic spasms, palpitations of the heart, hiccough, respiratory or abdominal palpitations, cardial neurosis;* the symptoms that it presents have their intensity round that muscle, while if the abdominal muscles are taken, they are observed more at the flank.

In his review, Cadeac divides the manifestations into physical and rational. In closing the extract, let us glance at them.

With the former, jerkings or kinds of palpitations are marked by sudden, intermittent and regular raising of the hypochondriac region. More manifest on the left than on the right, their maximum of intensity is about the middle third of the limit of the thoracic and abdominal cavities. They may be so powerful as to

shake the whole body and may be heard 10, 12 or even 15 steps away. Applied on the last ribs, the hand receives an energetic knock, which increases all along the diaphragm. Very light, on a level with the heart, they seem limited only to a portion of the diaphragm. Their relations with the cardiac systoles are not constant, being sometimes but 10 to 15 a minute, or again as numerous as the cardiac contractions; they may be isochronous with the precardial shock; they are ordinarily isorythmical and heterochronous, but following closely the ventricular contraction. They become stronger and more frequent by exercise.

They are often accompanied with a sudden expiration, jerky, short, as in hiccough of man, and followed by a loud rattling at the throat or a kind of smothered moan. The muscles of the cervical region may at the same time be also contracted as in lockjaw, while those of the trachelian region are relaxed. By auscultation a dull, not clear, deep murmur is heard, diminishing towards the posterior part of the animal and the anterior regions of the chest.

The rational manifestations are described by Cadeac as follows: "The flanks are intersected; the respiration is subsultory; placed near the nostrils, the ear perceives three inspirations coinciding with the pulsations; each of these inspirations is followed with an expiration so weak and short that the current of expired air cannot be felt; the fourth inspiration is followed by a strong and long expiration, which lasts during three palpitations; then breathing starts again with the same phenomena returning."

Often much prostrated, the animal generally manifests no uneasiness, or anxiety and is as gay and natural as ordinarily.

When the abdominal muscles are affected, the distinction is easily made, the contraction of the muscles being noticed and felt on the flank; there is besides synchronism between the breathing and the retraction of the epigaster and the elevation of the intercostal spaces.

We hope that this description will make our friends fully acquainted with that ailment, which I believe is often described under the name of *Thumps*.

* * *

On Rabies Again.—In our January chronicle, I made some extracts relating to experiments which Professor Noguchi had made at the Rockefeller Institute which I concluded in saying that the discovery of Professor Noguchi would throw a brilliant light on the pathogeny of rabies, which would be admired the world over, and I might add would attract general attention.

It indeed has, and has also stimulated the investigations of others. Professor G. Volpino of the Royal University, Institute of Hygiene, of Turin has just sent to the *Presse Medicale* results of some researches he has made on the same subjects. He writes:

"Prof. Noguchi having stated that in cultures made with rabid material, according to the method he used for the culture of the spirochetes of recurrent fever he had found granulated and sometimes nucleated corpuscles that he interpreted as the morphological representatives of rabid virus."

"We (Prof. Volpino) have undertaken, since several months, investigations so as to obtain culture of the rabid virus, according to the technic of Noguchi and in these we have had occasion to observe in the microscopic preparations special formations deserving publication. * * * In two preparations we found elements very similar to those of Prof. Noguchi, and also formations of a uniform pale blue, bluish formations with a clear center, perfectly discolored or colored rosy. Some of them presented in the center one or two granulations purplish or dark blue in color which seemed to be on the way to segmentation. Single, sometimes by two or by three, free and in form of cocci, there were also formations with cystic appearance.

"At first we thought we had cultivated the virus of rabies and that we had found the corpuscles described by Noguchi, but later on we found these same formations in other preparations, which were not taken from cultures of rabid virus."

Further researches having demonstrated that a great number of these formations had the form, the dimensions, the peculiarities of structure with the corpuscles described by Noguchi, Volpino concludes that the corpuscles that he has observed do

not represent forms of the rabid virus, but were small droppings coming from the lipoid substance of the fluid in which the cultures had been made and taken from the original ones he had made.

Without denying the possibility of the culture of the virus of rabies according to the technic of Prof. Noguchi, and suggesting that possibly there may be some differences between the formations spoken of by Noguchi and his, Volpino says that one cannot conclude the living nature of certain formations, because these have been found in a tube of virulent culture.

* * *

The Diagnosis of Rabies has been the occasion for the publication of a remarkable communication in the *Annales de l'Institut Pasteur* by Madame Doctoresse Lina Negri Luzzani, from the laboratory of Prof. Golgi of the University of Partia. The authoress confirms Negri's method.

To make out a positive diagnosis, one must have the head of the suspect animal and proceed before anything to the examination of the horn of Ammon, in the fresh condition. This examination alone will almost always be sufficient to make the diagnosis.

After giving her modus operandi and a long consideration on the methods of coloration she resorts to, the authoress concludes:

1. In the present stage of our knowledge, the demonstration of the specific parasite described by Dr. A. Negri is the surest means of making a rapid diagnosis of rabies not only in dog, but in all the animals susceptible to contract rabid infection.

2. In ordinary practice it is sufficient, in searching for it, to look in the horn of Ammon, in which the parasites are more numerous, with more developed forms and in the most precocious period of the disease. However, if one has not at his disposal for examination the horn of Ammon, that of any other region of the nervous system (cerebral structure, cerebellum, cerebro-spinal ganglions) can be used for the diagnosis.

3. Among the methods recommended by the various authors so as to facilitate and make rapid the demonstration of the parasite, the method of Negri is the simplest and the quickest. Examination of preparations, in fresh condition, is alone sufficient in the majority of cases, to detect the presence of the parasite. If the result is negative, the coloration of Mann of sections fixed in Zenker and enclosed in paraffin, is the best to bring out the most minute forms of the parasite.

4. The presence of the Negri bodies allows the positive affirmation of the diagnosis of rabies, with exclusion of all ulterior proof; but, on the contrary, if the microscopic examination has given a negative result, one must resort to the experimental test of inoculation. In a small number of cases excepted, the negative microscopic examination will correspond to a positive experimental test.

* * *

About Malleine.—Several months ago there appeared in one professional journal, a notice which was certainly made to draw attention and might have serious sequelae in the veterinary world and amongst stock breeders and owners of horses. This notice read that after numerous experiments made in the Russian army, the Secretary of War of that country had prohibited the use of malleine, at least on horses free from suspicious symptoms. Before taking this decision, an inquiry had been made near the principal scientific authorities of Europe and this inquiry was not entirely in favor of the injection of the revealing toxine. Among these authorities were mentioned the names of Profs. Damman, Ostertag, Hutyra, Edelman, Froehner, Perroncito, etc., etc.

At one of the meetings of the Société Centrale, Mr. Mouilleron, the actual chief of the Cavalry of the Company of Omnibuses in the City, with which he has been connected for years, has brought the subject before his colleagues and read a paper which is the most imposing argument that could be brought in relation to the benefit obtained by the use of malleine.

" In looking over my notes," said Mr. Mouilleron, " I see that from January, 1893, to January, 1913, I have the record of 42,653 tests of malleine, and on this number, rather sufficiently high, I have had *no positive error,* that is on animals whose reaction was *positive,* except in five cases. All the others that had reacted and were killed had the diagnosis revealed by malleine, confirmed at post mortem. The five cases that gave negative reaction being killed proved also to be glandered." As Mr. Mouilleron has had the opportunity of seeing cases where the thermic reactions were late (in three cases, 18 hours after the injection; twice, 22 hours after; twice, 26 hours; and in one case the local reaction having appeared at the fifty-second hour, although the hyperthermy had developed normally and remained three days), the question might be asked if the conclusions of the five negative cases had not been made too hastily.

By the use of malleine, glanders has been wiped out and kept out for years from the stock of that large company.

* * *

After this powerful exhibition of the results and of the benefits that were obtained by the use of malleine, Mr. Mouilleron makes some restrictions on the method of the application of the reactive agent and gives some indications upon the value of the three principal manifestations, the condition of the temperature, the local and the general reaction, which are the elements upon which the diagnosis is established.

" The reacting trial does not always appear in the normal delay; one and sometimes two may be wanted and yet the three factors not having an equivalent diagnostic value, it is nevertheless possible to make out if one is or not in the presence of a concealed manifestation of the disease.

" Alone, the hyperthermy is not sufficient to diagnose glanders; it may give a certain suspicion which demands a further observation of the suspect subject, and a second test after ordinary length

of time, by which the diagnosis may be definitely established. First, when malleine was introduced in the fight against glanders a great importance was attached to that reaction, to its graphic, and there was a tendency to condemn animals with this single manifestation. There was a true and abusive excess which has, however, disappeared a long time since.

"If the thermic elevation alone is not sufficient to reveal the existence of glanders, the local reaction, on the contrary, even if alone, is sufficient to clearly demonstrate it. It is not necessary that the oedematous swelling be very large, with its peculiar form, warm, painful and with lymphatic tracts radiating in all directions, it is sufficient that it be present, a little spread, thick and, above all, that its sensibility be exaggerated to conclude with certainty at the presence of the glanderous affection.

"For the general reaction, it may be absent without diminishing the value of the diagnosis; it has always appeared to the author, apart in very virulent cases, such as in acute glanders, that it seemed to have an individual character, nervous and irritable subjects always presenting it; dull and lymphatic on the contrary manifesting it only rarely."

To resume, there is no necessity to be as exclusive towards the use of malleine as it had been reported it was ordered, as after its powerful assistance already rendered, it may no doubt render immense services by the delicate sensibility of its revealing qualities wherever large collections of horses may exist.

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Contagious Pustular Dermitis.—Army veterinarians have often opportunities that are not offered to the private practitioners of seeing and observing, from beginning to end, epizootic affections.

An opportunity having presented itself to Messrs. Fontaine and Mespoulet, of the Saumur Cavalry School, to observe an epizooty of contagious pustular dermitis they made a clinical and

bacteriological study of it and recorded it in the *Military Veterinary Review.*

This epizooty prevailed among the horses of the Cavalry School, affecting some thirty cases. It was supposed to be due to the introduction of a new lot of horses coming from Paris.

The eruption was manifested by a more or less large number of pustules on the withers, the back, the ribs and even the rump. Before the apparition of these pustules, there was a symptom which so far has not been described in classical works, viz.: That the horses would lick themselves persistently over different parts of the body, even in places where eruptive lesions would not appear after.

The evolution was ordinary; a small pimple on the skin, with the hairs raised and soon becoming the seat of a citrine exudation. The lymphatic blood vessels starting from this spot were very painful; after forty-eight hours the soreness would disappear and a scab was formed under which there was greenish pus in a small cutaneous excavation. Left to themselves, the pustules would get well in about 20 days and the hairs grow over.

Pus, taken after pulling the hairs, and crust were taken for microscopic examination to make cultures and experimental inoculations.

The pathogenous agent was found to be a fine rod with round extremities and having sometimes the form of a cocco-bacillus; it takes the Gram. In cultures the microbe is polymorphous; in peptoned beef bouillon it appears much finer than in the pus; it first clouds the medium, then collects in the bottom of the tube, forming a deposit more or less abundant.

On other cultures, gelose, serum, etc., there are formed after a few days small whitish yellow spots. On horse serum the colonies described in classical works were not found by the authors.

They believe that the bacillus that they have observed is somewhat different from the classical bacillus.

Experimentally the disease can be easily reproduced in putting

on the intact skin of a healthy animal one drop of pus, or of culture or in rubbing virulent products over it. After an incubation of two to four days, pustules appear similar to the spontaneous one.

In cases of natural contagion, the authors believe that the incubative stage lasts longer, sometimes more than one month; frictions and rubbings with soiled harnesses being the cause.

Laboratory animals, white mice, guinea pigs and rabbits, readily take the affection by subcutaneous inoculation of pus or cultures.

The bacillus resists dessication, but is readily destroyed with antiseptics; the microbian virulency is so much greater when the lesions are more recent; they are so much more active when they are younger.

This affection will certainly be also observed by other veterinarians having the care of a large number of horses.

* * *

A New Anaphylaxy.—Prof. Ch. Richet has presented recently before the Academie des Sciences here new facts relating to anaphylaxy which are of great interest.

He has obtained a magnificent anaphylaxy with no colloid substances. He took for his investigations the white globules of the blood of dogs; no change in the leucocytosis after a first chloroformization; but after a second, a strong leucocytosis. Thus discovering a paradoxical fact which contrasts entirely with what is known of anaphylaxy.

The conclusions of the researches which were made in collaboration with Dr. Lassabliere are: 1. Dogs chloroformed a first time never present leucocytosis either during chloroformization or in the days following; 2. On the contrary, when chloroformed a second time, they exhibit a strong anaphylaxy which begins, the next day after the administration of chloroform, to reach its maximum the eighth day; a lapse of three weeks having been left between the two chloroformizations.

This phenomena can only be explained by the hypothesis of an anaphylaxy of a type unknown to this day, *an indirect anaphylaxy*. Indeed, in this case of preparation and appearance of the anaphylactic accidents, in particular here the leucocytosis, initial manifestation, are due not to the chloroform itself, but to albumines produced by the alteration of the liver and of the kidney under the influence of the chloroform.

It seems then, says Dr. Richet, that anaphylactic substances must be classified into two groups: 1. Those that produce anaphylaxis *immediately*, in a few minutes, by passing directly in the blood; 2. Those that promote later anaphylaxis in bringing albuminoid breaking up, an auto-intoxication harmless the first time and injurious the second; it is the indirect anaphylaxis.

In pathology this indirect form may play a part no less important than the direct, the only one which has been studied till now.

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Bibliographiic Items.—We have received: Quarterly Bulletin *Chicago Veterinary College*, December, 1913. *Agricultural Journal* of the Union of South Africa, December, 1913, January, 1914.

Report of the Veterinary Director General.—Dr. Fred. Torrance, Department of Agriculture of Canada. It forms an illustrated pamphlet of a little over one hundred pages, resuming the work done during the year ending March, 1913, giving detailed statements for each one of the diseases that prevailed during that year, and received the attention of the staff of the Department. Interesting facts relating to glanders and the extensive use of malleine, to hog cholera and the value of the use of serum, to tuberculosis where the test with tuberculine has been extensively applied, of dourine with the methods of diagnosis of Dr. Watson, anthrax, mange, rabies, etc., etc. In the form of appendix, reports are introduced by several of the inspectors of the staff. There are also a few illustrations.—*The Treatment of Tetanus,*

by C. O. McClintock and W. H. Hutchings; *Diagnosis of Dourine by Complement Fixation,* by John R. Mohler, A. Eichhorn and J. N. Buck, of the Bureau of Animal Industry.

A. L.

THE UNITED STATES GOVERNMENT SAVES MONEY BY INCREASING THE EFFICIENCY OF ITS VETERINARY SERVICE.

An Open Letter to Senator Charles S. Thomas, of Colorado.

> "It is thought that it will greatly improve the service to give the rank provided in this bill, and that *in that way much money will be saved by virtue of increased efficiency in this service.*"—From the Report of the House Committee on Military Affairs, February 9, 1914, (p. 6, Report 239, 63d Congress, 2d Session).

Ignorance is wasteful; efficiency, carrying with it a sense of responsibility, saves money. The denser the ignorance, the greater the waste; the higher the efficiency, the more money is saved. This, as a business principle, is undebatable. Its wisdom, whether applied to Government business or commercial business, cannot be made plainer by putting it in the form of an adage. Hence, proceeding on this as a principle, the Military Committee of the House of Representatives has recommended that the Army Veterinary Service Bill be made a law.

Senator Charles S. Thomas, of Colorado, a member of the Sub-Committee of the Senate, in whose hands the bill, S. 4331, "To Consolidate the Veterinary Service, U. S. Army, and Increase Its Efficiency," has been placed for consideration, is said to be questioning in his mind the consistency of supporting that bill on the hypothesis that any measure passed which increases the money expenses of the Government by so small an amount as a few picayunes, whatever be the actual gain in stalwart efficiency in its service, is contrary to the Democratic policy of retrenchment. This is retrenchment run stark mad. It is false

economy, misplaced penuriousness which does violence to the sound judgment and truer sense of economy in this instance recommended by the Democratic members of the House Committee on Military Affairs in their statement placed at the head of this letter.

Try to make up a balance sheet, placing in the one column the most insignificantly paltry sum of money which additionally must be charged against the Treasury if the proposed veterinary bill passes; in the other column place what the Government gains. What do you find? The increased cost per annum is $31,376.26. That we can figure to a nicety and we could have told it to the thousandth part of a mill, if that had been wanted. On the other side of the balance, the complete gain is unfigurable. But it far and away outbalances the few dimes asked for it. The Government proposes to use the military veterinary service as part of that great sanitary machine—the Medical Department; it is to become part of the grand sanitary system of the army. What the economic value of that sanitary system has been to the army the country and the world is well known to Senator Thomas and to everybody else. He knows what it did in the discovery of the cause and means of prevention of yellow fever, of dengue, of hook worm, in the prevention of typhoid fever. Is the sum total of the gain in human health and the prevention of death to be balanced in the fine figuring which carries the money summary to the third or fourth digit beyond the decimal point? Shame on us, if that is the length of our consideration. The Surgeon General of the Army tells Senator Thomas that he proposes to attach the veterinary service to the medical department to enlarge its sanitary work, meaning in two directions, in prevention of the frightful losses in army animals and the prevention of diseases transmissible from animals to man. There are problems to be solved in the department of veterinary medicine involving millions of dollars to this country. The Senator from Colorado is told by the medical experts of the army, who have accomplished so many marvels, that similar performances may be expected with the building up of the veterinary service. As a

plain business proposal, with the gains large for the American people in higher efficiency, in delivery from wasteful inefficiency, the Army Veterinary Service Bill should pass. A cent placed near enough to the eyes will shut out the light of the sun. It is unwise to be blinded by a penny-wise, pound-foolish policy of retrenchment carried to that extremity where it is as unsound in principle as it is unbusiness-like. G. S.

HEARINGS BEGIN ON THE LOBECK BILL.

The Review has urged the support of the profession of the country to H. R. 9292, increasing the standing of the veterinarians in the B. A. I. service, and benefiting them financially. Increased compensation means increased efficiency; so that while our brothers in the B. A. I. service can better provide for their families under the conditions that the passage of this Bill would bring about, the government would also benefit by its passage in increased efficiency and the attraction to the service of high-class men. Dr. S. J. Walkley, secretary of the National Association of Bureau of Animal Industry Employees (whom the executive committee of that body have chosen to represent them at the Nation's Capitol, wrote us from Washington, under date of April 14, that the Bill would come up for a hearing at 10.30 a. m. Monday, April 20, before the House Committee on Agriculture. We sincerely hope that in our next issue we may be able to write some pleasant information as a result of the hearings before that committee. The Buffalo branch of the national B. A. I. organization are sending Prof. V. A. Moore, of Cornell; and the Milwaukee branch are sending Prof. M. P. Ravenel to Washington to appear before the committee in the interest of the measure; and the fact that both of these gentlemen were appointed by Secretary of Agriculture Houston last summer to investigate the meat inspection system in their respective territories and report their impressions to the Secretary of Agriculture, would seem to suggest that their arguments before the House Committee on Agriculture would have some weight. We

understand that their impressions, as expressed to Secretary Houston in the report of their investigations, was to the effect that they considered B. A. I. men very much overworked and underpaid; so it is not difficult to imagine their line of argument before the House Committee on Agriculture. Secretary Walkley will also appear before the committee with a forceful argument for the passage of the Bill; and also Congressman Lobeck, the father of the Bill. And following the work of these gentlemen before this committee, every member of the profession should add his boost with his Congressman and Senator, after the Bill has been reported out of committee. Keep pushing until it becomes law.

THE CONTROL OF BOVINE TUBERCULOSIS IN A DAIRY STATE—SOME STATISTICAL FACTS.

During March, the lay press (or perhaps we should limit it to the New York *Globe,* as we do not remember seeing the articles in other papers) published a series of articles, criticizing the New York State Department of Agriculture to an extent that would tend to shake the public's confidence in that great department of the Empire State, and to cause a feeling of uneasiness (to say the least) on the part of milk consumers; more especially those with families of children where milk forms a very large and very important part of the daily food ration. The REVIEW's confidence, however, was *not* shaken; felt no vibration whatsoever; crediting the wild statements of the critics to a misconception on their part of the policies of the Department of Agriculture, and a misconstruction of their methods of dealing with the momentous question of controlling tuberculosis in a *dairy* state, and not working a hardship upon its citizens by extensively curtailing the milk supply. Our confidence remained unshaken because of our high regard for the Commissioner of Agriculture and the gentlemen of our own profession that are in charge of the Bureau of Veterinary Service of the Department. Had the critics gone to the proper source for their information, or care-

fully investigated the general information that they received, they would not have frightened milk consumers without good cause, nor made public their own lack of information on a subject upon which they were attempting to enlighten the public. Had they understood the principles of the Bang method, and the system of its application by the New York State Department of Agriculture, they would not have horrified the public by making the unqualified statement that diseased cows were being used to supply milk to the old soldiers and inmates of other state institutions mentioned. The following extract from a statement from Commissioner Huson shows that the Department is guided in its work by a law enacted in 1909:

"The law providing for the preservation and segregation of reacting animals that show no physical evidence of disease was enacted in 1909 and has been in successful operation since that time. The same veterinarians that were charged with the duty of putting this law into operation are still engaged in the work of its enforcement. The law is not perfect, and experience has shown the necessity of various amendments. Last year, and again this year, this Department urged before the Legislature the enactment of such amendments to the law as would tend to more completely safeguard the situation. One of these amendments provided that a person must be the actual owner of an animal for at least four months in order to be entitled to indemnity. The purpose and object of this amendment was to provide for the payment of indemnity to the actual dairyman and farmer and prevent, as far as possible, traffic in diseased or suspicious animals. Other amendments no less important were proposed, among them a physical examination of all dairy herds and the removal therefrom and immediate slaughter of all animals that showed such physical evidence of disease as rendered them unfit as a source of milk supply. These amendments failed of passage and some of the men now being heard in criticism were active in opposition to their enactment."

Chief Veterinarian Wills, of the Bureau of Veterinary Service, says that the statement made by the critics that there are

200,000 tuberculous cattle in the state is not indicated by the facts on file in the office of the Department, and that the statement that 40 per cent. of the tuberculous animals in the state are spreaders of the disease is grossly exaggerated. We reproduce below *statistics* relative to the extent of bovine tuberculosis in New York State, taken from a public statement from Dr. Wills, who says: "We believe that these records are the most accurate and complete of any in existence, so far as the State of New York is concerned." And further along he adds: "Any fair-minded person must concede that the bureau of veterinary service of the Department of Agriculture, with the assistance of the veterinary profession and the cattle owner, is to be given some credit for the improvement in conditions."

The following figures show the work of the Veterinary Bureau for the (fiscal) years 1909 to 1913 in tuberculosis work:

	1909-10	1910-11	1911-1912	1912-13
Number tested	14,181	17,909	21,421	18,668
Number reacting	3,029—21%	2,993—19%	4,178—19%	2,891—16%
Number localized cases	1,685	2,069	2,690	1,940
Number generalized cases	1,240—42%	824—28% pl.	1,117—29% pl.	581—22% pl.
Number no lesion cases	104—3%	100—3%	93—2.2% pl.	85—3%
Total indemnity	114,800	154,100	186,965	146,414.75
Number tested privately within state		5,993	12,038	20,545
Number reacting		425	473	528
Number held on Bang System:				
Owners				276
Regular				407
Total tested in state		23,902	33,459	39,213
Total reacted		3,418	4,651	3,419
Percentage reacting		14.3	13.9	8.7

The above figures show that while the number of cows tested in the period of time was increased from year to year, there being over fifteen thousand more cows tested in 1912-13 than there was in 1909-10, the percentage reacting had decreased from 14.3 per cent. to 8.7 per cent. during that period. Any one familiar with the subject of bovine tuberculosis knows that dairy cattle are much more susceptible to it than beef cattle, and in view of the foregoing facts will be willing to commend the Department of Agriculture of the State of New York (dealing as it is practically exclusively with dairy cattle), for the progress that

it has made, rather than condemn it for what it has not been able to accomplish. Its critics probably feeling that complete eradication was the least to be expected. And yet they offered no solution, except the tuberculin test, which the Department thoroughly understands, and fully appreciates the value of. The following, extracted from a public statement made by Consulting Veterinarian to the Department, John F. De Vine, explains the methods employed by the New York State Department of Agriculture in applying the Bang system; which application was misconstrued by the critics as feeding the milk of diseased cows to inmates of state institutions. They also feared contamination from vegetables grown in fields fertilized with manure from the segregated animals, which Dr. De Vine refers to:

"The Bang method, briefly, is that where an owner requests that his herd be tested by the state, or, where the owner has his herd tested by his private veterinarian and a certain number of animals react, and the owner asks for state appraisal, these animals are then carefully examined as to physical evidence of tuberculosis and such as exhibit any clinical evidence of the disease (the positive determination of which is often aided greatly by the fact that they have reacted to the tuberculin test); or, any animals that are otherwise undesirable are immediately slaughtered under the same rules and regulations as are provided for by our federal meat inspection laws. With animals that appear physically sound and possess value as dairy cattle, both as producers and reproducers, an attempt is made to preserve them. They are segregated and placed on the experimental farms. These farms may be the owners, as is the case with several of the big Holstein breeders of the state at present (in which case no indemnity is allowed by the state); or, if the owner does not wish to segregate or keep these animals, they may be placed on one of the state farms or any other farm where the owner from his recognized reliability and ability in stock feeding and dairying is considered a desirable person to prove the feasibility of raising healthy calves from diseased mothers. The milk from these diseased animals is in all cases thoroughly pasteurized, and the

calves raised separate and apart from the diseased animals in the hope of weeding and breeding tuberculosis out of the dairy herds without the great loss of immediate condemnation and slaughter of the excellent dams so affected.

" While it is a known fact, and admitted by every fair-minded person versed on the subject of dairying, that these Bang herds, after being carefully, repeatedly and periodically examined as they are for clinical evidence of tuberculosis (this examination being far more *rigid* and *positive* in condemning than can ordinarily be carried on with animals which have not reacted to the tuberculin test) are much safer as milk producers than is the average dairy herd which has never been subjected to the tuberculin test and which are very irregularly and ofttimes inefficiently examined. In other words, a conscientious dairyman who finally decides both for public health and economical reasons to have his herd tuberculin tested, he having learned of the character of the disease and the necessity and advantage of having a tuberculosis free herd, does so. Ofttimes this very man from his business ability has one of the best appearing and best producing herds in the community. The tuberculin test reveals several diseased animals. Immediately the community begins to talk and these animals are shunned as if they were afflicted with the smallpox. As a matter of fact they are no worse the day after the test than they were the day before, and right across the fence his neighbor John Smith's herd is often many times more dangerous, but nothing is said about John Smith's herd and he continues to ship milk and the public continue to consume it. The conscientious dairyman's cattle are immediately separated, the diseased from the well, and the milk before being used is pasteurized at a sufficient temperature to destroy all living tuberculous organisms. This then is the herd that has been made doubly safe by taking out the clinical cases and by pasteurizing its product; and this is one of the things that the Department is condemned for.

"Another criticism is the danger of the tubercle bacilli in the manure to the public in consuming vegetables grown in the

ground where this fertilizer is used. While there is the same element of danger in this as there is for one to ride in a public conveyance or walk through a public street or a pasture field and touch the grass which cattle have grazed on, still it is entirely too technical and imaginary unless we are to live in sterilized houses or wear antiseptic masks. No less an authority than Dr. W. H. Park, Director of the Department of Health Laboratories, New York City, states that the danger is too remote to be considered and points out and agrees with other authorities that the tubercle bacilli do not multiply outside the living body, and that the organisms passed with the faeces instead of falling into and being nourished by a suitable medium, such as milk, immediately after leaving the body begin to perish, and death and dilution continue both from exposure to air and sunlight and from fermentation due to the myriads of saprophytic bacteria, so that in the matter of a few weeks only a few of the most virulent organisms are still alive. These in all probability would perish on any vegetables that grow above the ground during the growth, due to further exposure to the sunlight. Again the dilution continues when the vegetables consumed in the raw state are washed or peeled. According to our present knowledge, it requires great numbers of the bovine tubercle organisms to produce the disease in the human, such, for instance, as might be contained in a quantity of raw milk. And lastly, it has been conclusively shown that the danger from the transmissibility of the bovine type to the human is during the infant period when great quantities of the organisms are consumed daily with or in a fluid that is favorable to the virulence of the organisms, and at a time when humankind is susceptible to the disease. It would, therefore, seem since the New York City Health Department and the State Health Department sanction this method of the Agricultural Department's attempt to control tuberculosis without causing a milk famine or ruining the dairy industry, that the policy of the Commissioner of Agriculture should not be so criticised.

"Another criticism, which seems to be often repeated, is that many of the cattle are slaughtered from time to time after being

placed on these Bang farms. This simply adds evidence to the careful way in which the Department keeps in touch with these animals, and any animal that shows the least evidence of the disease advancing, or of any other disease, or becomes unprofitable, is immediately slaughtered and inspected to determine the fitness of the carcass for food, either by a capable veterinarian or a physician who has had special training in this work. When any of the carcasses are passed for food, they are always sold as such to the best possible advantage, every pound being accounted for in the Department's records, the proceeds of which go direct to the State Treasurer and in no way benefit anybody but the taxpayers as a whole.

"I, therefore, fail to see why this criticism is indulged in. Can anyone suggest a more sensible and safe way?

"Statement showing amount of indemnities paid by state on account of condemned tuberculous cattle, also the sums paid into state treasury from receipts from sales of carcasses and hides.

"For the fiscal year ending September 30, 1910:

Indemnity	$114,800.65
Receipts from sales of carcasses and hides	22,104.37
Percentage of cash returns	19-25/100

"For the fiscal year ending September 30, 1911:

Indemnity	$154,100.43
Receipts from sales of carcasses and hides	23,881.57
Percentage of cash returns	15-49/100

"For the fiscal year ending September 30, 1912:

Indemnity	$186,965.80
Receipts from sales of carcasses and hides	34,231.34
Percentage of cash returns	18-3/10

"For the fiscal year ending September 30, 1913:

Indemnity	$146,414.75
Receipts from sales of carcasses and hides	36,67'.73
Percentage of cash returns	25-5/100

"Increase in percentage of cash returns for the year ending September 30, 1913, over previous year, 36-88/100 per cent."

While the assumption that the criticism of the New York State Department of Agriculture through the public press may have gone forth through the country and been read by veterinarians, who would naturally be desirous of knowing the facts, would be sufficient reason for our reference to it, our real reason is that the problem that New York State is attempting to solve, *i. e.*, the most economic method of controlling bovine tuberculosis in a dairy state, is not an easy one, and any suggestions that will help the Department to improve its system, we feel sure, will be welcomed. The criticism referred to, while wholesale, carried with it no suggestions to help them to improve their system. That must come from those who know something about that which they are criticising. It must come from the veterinary profession; and we are sure that if any members of the veterinary profession who have been pondering these questions (and many there are who have made a life study of them) have any criticisms to make on New York State's system of dealing with the control of bovine tuberculosis, they will be gratefully received by those in charge of that important work in that commonwealth. Honest commendation is equally helpful; as it is in any cause.

MONEY GIVEN FOR STUDY OF ANIMAL DISEASES.

Rockefeller Institute Takes Up Cholera and Tuberculosis.

The danger to health and the enormous economic loss resulting from animal diseases, such as hog cholera and tuberculosis, have at last been recognized by great business and financial interests as a matter affecting the economic welfare of the country. The government has long realized them, and the trades affected have long suffered from them, but their momentousness has never until now been properly realized by the country at large.

That a crisis has now been reached which has forced attention is indicated by the announcement this week that John D. Rockefeller has given a million dollars for the study and eradication of

these diseases, and that James J. Hill has pledged $50,000 for the study of hog cholera, with more to follow.

The Rockefeller Institute for Medical Research, one of the greatest scientific institutions in the world, has received from John D. Rockefeller $1,000,000 as an addition to its general endowment for the purpose of organizing a department for the study of animal diseases. It announced also a pledge of $50,000 from James J. Hill to aid in the study of hog cholera.

Heretofore the Rockefeller Institute has confined its investigations to research work in the fundamental problems of biological science and to investigations in the field of human diseases. The formal announcement of the opening in the near future of its new department contains this statement of the scope of the inquiry:

"Animal diseases are important, not only because of their economic significance but because of their close relationship to human diseases. The loss to the country entailed by animal diseases is to be calculated not only in terms of animals destroyed but with reference to the discouraging effects on enterprise in animal husbandry which such epidemics as the recent epidemic of the hog cholera always exert. It has been estimated that in the northwest alone hog cholera has killed $60,000,000 worth of swine during the last year.

"In the history of medical science, the work of Pasteur on anthrax, and the more recent observations in this country on Texas fever in cattle, which opened the door to present knowledge concerning insect carriers of malaria, yellow fever and other diseases are conspicuous illustrations of the value on studies of animal diseases."

It was said at the office of the Institute that no announcement will be made as to where the animal research work will be carried on until after the organization of the department is completed.

May Study Bovine Tuberculosis Also.

It is understood that one of the big features of the work of the new department will be a study of cattle tuberculosis, with

which so many animals are affected throughout the country. Bovine tuberculosis is often contracted by persons through the bacilli in milk that is not properly pasteurized and its danger through other dairy products, like butter and cheese, is also recognized. Some states pay thousands of dollars annually to cattle raisers and farmers for tuberculous cows that are condemned and killed by order of inspectors of the State Agricultural Department. But the meat industry suffers losses running into the millions through this same cause for which it receives no recompense whatever.

The problem of hog cholera is one that is confronting the meat industry with as much danger as the scourge of animal tuberculosis ever did. What these diseases have cost the industry will never be accurately reckoned. The losses are almost unthinkable. The trade believes it to be high time that the best thought and effort obtainable be devoted to a campaign against these diseases. The announcement that the Rockefeller Institute has taken up the work will be hailed with gratification.—Quotations from *The National Provisioner* of April 4, 1914.

THE EUROPEAN TOUR AND THE TENTH INTERNATIONAL VETERINARY CONGRESS.

When this issue goes into the mail, but six weeks will remain to the time when good-byes will be sung out from the steamer, and handkerchiefs will be fluttering from the pier as a merry body of veterinarians and their kinsfolk set off for a tour of Europe, with the Tenth International Veterinary Congress, London, as their objective point, under the most auspicious condition imaginable. For June 13th is the day that the vessel carrying that distinguished cargo will steam out of New York Harbor. It is therefore imperative that any who expect to be of that merry party, and have not yet signified their intentions to Dr. Eichhorn to that effect, do so at once; thus insuring to themselves and to the entire party more commodious quarters on the steamship, and materially aid in the making of arrangements for the com-

fort of the party en route. We have said this before, and will promise not to repeat it again, but feel at this time that another word may not be amiss, as Dr. Eichhorn has received several letters from prominent veterinarians, veterinary institutions and veterinary societies abroad, inquiring as to the approximate number of the American party, so that they may arrange accordingly in their efforts to make the trip more enjoyable and more profitable by their co-operation. And we will also mention again, and for the last time, the desirability of Americans becoming members of the Congress, even though they cannot attend this coming meeting. This membership, which only costs $5, indicates the interest taken in international affairs by American veterinarians, and insures to them the publications of the Congress, which are worth much more than that sum. Send your money to Dr. Adolph Eichhorn, Department of Agriculture, Washington, D. C., and he will fix the matter of membership up for you. We are also recently in receipt of a list of some forty-six London hotels, from Sir Stewart Stockman, but have refrained from publishing them for the reason that the management of the American touring party have selected St. Ermin's Hotel, St. James' Park, as the London headquarters of the American party, and the other hotels can therefore have no special interest for them. The location of the St. Ermin's is ideal, being only three minutes' walk from the meeting place of the Congress, and very convenient to all the important public buildings, art galleries, etc. The prices in this great hostlery are moderate, as rooms with light and attendants may be had from 5 shillings up. Breakfast, 2 shillings; luncheon, 2 shillings; and dinner, 5 shillings, in the hotel, and there are any number of restaurants and eating places all around it. To have reservations made for you in hotel headquarters with all your friends, Dr. Eichhorn must hear from you as soon as possible. For while you do not get to London until August 2d or 3d, the management want all their arrangements completed before the party sails from New York June 13th. There may be a few American veterinarians who will not find it possible to take all the time required for the European tour, but who ex-

pect to go direct to London for the Congress. To them we would suggest the advisability of requesting Dr. Eichhorn to make reservations for them at the St. Ermin's; thereby adding to the pleasure of their trip.

THE A. V. M. A. AT NEW ORLEANS.

While the fifty-first annual meeting of the A. V. M. A. is still a long way off, it is difficult to refrain from talking about it. Especially in the presence of the activity that is being manifested by our friends in the South. At each of the recent association meetings in the South some action has been taken bearing upon the coming meeting of the A. V. M. A. in New Orleans. The Louisiana Veterinary Medical Association, of which Dr. W. H. Dalrymple, of Baton Rouge, is president, and Dr. F. J. Cambon, of New Orleans, is secretary-treasurer, bears the announcement of the coming meeting in red letters upon its stationery. And under date of March 28, 1914, exactly nine months prior to the opening day of the meeting, we received (just too late for our April issue) a list of the committees that have been appointed to prepare for the 1914 meeting. Maybe they do not expect to make some preparations! We do not intend to get really started on the New Orleans meeting until we have shipped our good friends off for the Study Tour and Tenth International Veterinary Congress, but publish below a list of the committees that are to arrange for it, which in itself is a guarantee of a record-breaking meeting:

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F. J. Cambon, Chairman, 208 Perrin Building, New Orleans, La.
Jos. L. Drexler — E. P. Flower

PROGRAMMES, BADGES, CONCESSIONS, ETC., COMMITTEE.

H. G. Patterson, Chairman, 222 Burgundy St., New Orleans, La.
J. A. Goodwin — S. C. Aymond
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ENTERTAINMENT COMMITTEE.

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B. E. Barham
H. Morris
Stanley Cook, B.A.I.
C. B. Maxwell

EXECUTIVE COMMITTEE.

W. H. Dalrymple, S. Moore, F. J. Cambon } Louisiana State University, Baton Rouge, La., *ex-officio*

F. J. Douglass, Chairman, 719 Girod St., New Orleans, La.

H. G. Patterson
E. P. Flower
Jas. L. Drexler
H. F. Vulliamy
L. M. Holmes
H. Moore
J. A. Goodwin
R. W. Tuck
E. A. White

THE MULE "INFERNAL BUT ETERNAL."

The mule has a champion—and a powerful one. It is no less than Henry Watterson, who in his Louisville *Courier-Journal* takes up the cudgels for that much abused animal. "Marse Henry" denies vigorously an assertion in the *Army and Navy Journal* that the supply of mules is diminishing. He shows that while the horse is losing his hold, the mule is emphatically holding his own, and gives good reasons for this fact, such as these:

"In war the mule plays with high credit the role of Gunga

Din. He is bullyragged. He is blasphemed. He is belabored. But he is always on hand when needed, and he is always needed. In peace he is sportive. His humor is sometimes mistaken for spitefulness when he kicks a well-meaning farmer into a protracted sojourn at a hospital or sends his soul skywinding into the hereafter with his body not far behind. But when it comes to pulling a load, uphill or on the level, subsisting upon a limited menu, and starving the veterinarian, he puts it all over his handsomer and more aristocratic cousin, the horse."

Not content with this eulogium of the mule, the eloquent Louisvillian soars further into the empyrean in laudation of his beloved subject, traces his ancestry and prophesies for him a glowing future, thus:

"There is still plenty of work for the mule to do. It is his proud distinction to cost almost as much as a small automobile. He was perhaps 7,000 years old when the automobile was invented. He is built on the original model. He has the same tendency to backfire that made it a risky business to start him when Alexander set out to cross the Indus, when Tamerlane crossed the Ganges, when Hannibal crossed the Alps, when Charles Martel double-crossed the Moors, when Washington crossed the Delaware and when the farmer boy tried to cross a swollen creek in the last freshet."

The truth is, the mule is considerable of an animal. No one who has experience with him will doubt, as "Marse Henry" says, "Although he is sometimes infernal, the mule is eternal."—From the Chicago *Inter Ocean*.

Report of Seventeenth Annual Meeting of the United States Live Stock Sanitary Association.—This report, covering over 250 pages, tells the story of the great meeting in Chicago, December 2d, 3d and 4th, 1913, and impresses one with the wonderful growth both in numerical strength and sanitary importance of that organization during the last few years. Always characterized by its earnestness and activity, it has recently become a power in the field of sanitation second only to the American Veterinary Medical Association; and a close second at that. Its effort to effect pure animal food products is amongst the noblest work of man; and Secretary Ferguson's remarks on the injection of hog cholera serum in the ham of the live hog are surely *a propos*.

ORIGINAL ARTICLES.

THE RELATION OF VACCINE THERAPY TO VETERINARY PRACTICE.*

By R. E. Spline, M.D., New York.

(*Continued from April issue.*)

Bacterial Vaccines.—Bacterial vaccines were introduced in 1902 by Sir A. E. Wright, of London, who demonstrated that the phagocytic power of leucocytes is much greater when the leucocytes are suspended in a blood-serum obtained from previously immunized animals than when suspended in normal blood-serum; and further, that the phagocytic power of the leucocytes is dependent upon the presence in the blood-serum of certain substances having a sensitizing effect on the invading organisms. These substances were called "opsonins" by Wright, who concluded that they are naturally increased during the process of immunity; and he discovered that they may be increased by injecting bacterial vaccines.

Definition.—Bacterial vaccines are suspensions in physiological salt solution of killed pathogenic bacteria. The suspensions are sterilized and accurately standardized to contain a definite number of bacteria in each cubic centimeter.

Therapeutic Action.—The therapeutic value of the bacterial vaccines is dependent upon *their stimulating action on the body cells of the patient; thereby producing various antibodies*—agglutinins, bacteriolysins, opsonins, precipitins, and other antibacterial substances—and *leading to a state of active immunity*, which in some cases may last for a number of years.

*Read by invitation before the Wisconsin State Veterinary Society at Milwaukee, February 10, 1914.

From the Lederle Antitoxin Laboratories, New York.

Vaccines vs. Serums.—Therapeutic serums are fluids containing *antibodies already formed,* and are injected into the circulation to supply anti-bacterial elements without stimulating the body cells to the production of these substances. Hence, *in the use of serums,* the antibodies formed in the body cells of the horse or other animal are supplied to the patient; and a condition of *passive immunity is established,* lasting only a few weeks. Therefore, serums differ from *bacterial vaccines;* the latter *confer active immunity and contain no antibodies.*

Preparation.—Bacterial vaccines are prepared by the Lederle Antitoxin Laboratories from cultures of pathogenic bacteria which have been grown upon suitable media under the most favorable conditions. *Several strains of the respective organisms are used;* for it has been demonstrated clinically, as well as in the laboratory, that different cultures of the same organism may vary widely in biochemic properties; and that most vaccines should be polyvalent in order to possess the greatest efficiency. *Polyvalent* means that the suspension contains several cultures of the same species of bacteria—that is, *several "strains" of the organism are used*—the cultures being obtained from many different sources of infection in which that species of organism is found. *All of the bacterial vaccines prepared in the Lederle Antitoxin Laboratories are polyvalent.*

The bacterial cultures are washed off with physiological salt solution and thoroughly shaken to separate the organisms; the bacterial suspension is subjected to a careful count; the organisms are killed by heating the suspension and by the addition, after cooling, of 0.25 per cent. trikresol. The suspension is then diluted with sterile physiological salt solution containing 0.25 per cent. trikersol until each cubic centimeter contains the desired number of bacteria.

Dosage.—Wright expressed the opinion that, by following the opsonic curve, indications might be obtained for the introduction of vaccines both as regards the size of the dose and the frequency of the injections. Suffice it to say, however, that the opsonic index unfortunately has not fulfilled those expectations

with which it was first greeted; and that any attempts at vaccine treatment must still be made upon a more or less empirical basis and with no more definite and accurate methods of dosage and frequency of injection than is afforded by clinical symptoms. But even so, there can be no doubt that a certain amount of good may be accomplished; how much, it is as yet impossible to say. So much depends upon individual cases, the personal factor of the observer, etc., that conclusions could only be drawn with great care. As yet, we do not know enough of what may or may not be accomplished to warrant any dogmatic statement.

The general rule in vaccine therapy is to *begin with small doses* and progressively increase; immunity being more effectively produced by repeated injections of gradually increasing doses than by a single injection of a large dose. At the same time the clinical effects in the individual case must be made the basis for the size and frequency of the doses; for the dosage is influenced by the nature of the infection, and also by the individual susceptibility. Should no improvement be noted, the size of the dose may be increased, or the intervals shortened, or both. If a pronounced clinical reaction occurs—characterized by fever and aggravation of local symptoms—it indicates that the dose has been too large; and the next injection should be smaller. We have sufficient evidence, however, to show that much larger doses than the maximum quantities now recommended may be given in most cases.

The amount of vaccine required varies according to the age and personal characteristics of the patient; and the type, duration, extent and severity of the infection. It is important to bear in mind, however, that the packages containing six different dilutions, as marketed by most loboratories, do not in any sense constitute a complete treatment. It is impossible to prepare any six graduated doses which would meet the conditions of every case; some cases might require 12 to 15 doses, while 4 or 5 might suffice for others.

As a general rule, *the intervals between the doses in* acute infections vary from one to three days. After the acute symptoms have subsided—as shown by a drop in the temperature and by

other signs of improvement—the intervals may vary from two to five days. In sub-acute and chronic infections, the vaccine should be given every three to seven days; the doses being increased according to the clinical symptoms.

Autogenous vs. Stock Vaccines.—A great deal of discussion has arisen regarding the question as to whether it is advisable to use autogenous vaccines, that is vaccines that are prepared from the cultures of the bacteria obtained from the patient; or whether it is better to make use of stock vaccines prepared from cultures of the organism causing the infection, but not derived from the particular individual to be treated. As long as we know so little of what vaccines may accomplish, it is clear that our clinical knowledge is not sufficient to decide such a question. We can only speak theoretically, and theoretically we must admit the existence of many strains of a given type of organism and also the possibility of individual differences in the organism. Upon this basis autogenous vaccines would appear to be preferable to stock vaccines, since autogenous cultures comply with the scientific requirements of a vaccine. From a practical standpoint, however, stock vaccines are more satisfactory to use for various reasons: (1) It is frequently impossible to prepare an autogenous vaccine for lack of proper facilities. (2) It requires several days to prepare an autogenous vaccine and this necessitates loss of valuable time in the treatment. (3) Since it has been demonstrated that different cultures of the same species of organism vary widely in biochemic properties, it is obvious that a polyvalent stock vaccine will produce a high grade of immunity. (4) An autogenous vaccine adds materially to the cost of an otherwise inexpensive treatment.

Use of Vaccines and Serums in Veterinary Practice.—The practical application of vaccines and serums in veterinary practice may properly be considered under three headings: Those used for prophylactic purposes; those employed as therapeutic measures; and those used as diagnostic agents.

Prophylactic Vaccines.—The principle of prophylactic inoculation is best illustrated by reference to human medicine. When

and how the discovery was made that the virulence of smallpox is greatly diminished by the introduction of virus through the skin is not known; but the principle was evidently extensively utilized in Turkey for prophylactic purposes early in the 18th century. Led by the popular belief, which was prevalent in Gloucestershire during the latter half of the 18th century, that individuals who had accidently become infected by cowpox were thereby protected against smallpox, Jenner put this idea to a test in 1796. To this end, he inoculated a healthy boy 8 years old with material taken from a cowpox vesicle on the hand of a dairymaid and, a couple of months later, showed by inoculation with cowpox virus that the child was actually immune. After this, vaccination was extensively practiced in different European countries and introduced into America. The source of material for a long time was obtained from cows that had developed cowpox; in some instances from horses affected with grease, the affections having been shown to be identical.

Rabies.—While the actual principle underlying the preventive vaccination against smallpox was scarcely recognized by Jenner and his contemporaries, their work nevertheless constitutes the basis of all modern vaccine work. To it may be directly attributed the successful preventive treatment of another prevalent disease, the pathogenic agent of which has not yet been isolated, namely, rabies.

We owe the discovery of this treatment to the genius of Pasteur; and to him undoubtedly belongs the credit for having first recognized the fact that, by the use of suitable attenuated virus, full protection may be afforded against the corresponding virulent affection. In Jenner's case, nature had performed the experiment for him; but Pasteur was the first who purposely employed animal experiments to demonstrate the principle in question.

The idea underlying Pasteur's Antirabic Treatment is to immunize the bitten animal within the period of time that the actual disease requires for its development. To accomplish this, it was necessary to so change the nature of the virus that the incubation

period following its injection would be materially shorter than that of the actual disease. This was accomplished by passing the natural or "street virus" through a series of 50 rabbits, when its period of incubation was found to be reduced to 6 or 8 days. Further passage does not change it; and such virus, which no longer produces symptoms of the furious type of rabies in dogs or guinea-pigs, but merely the paralytic type, is now termed "fixed virus." Pasteur then found that the virulence of the virus can be still further diminished by desiccation and that after 12 to 14 days it is lost altogether. The plan of treatment is to inoculate the animal on succesive days with material of increasing virulence, beginning with that which is altogether innocuous. The mortality from rabies, which formerly ranged between 14 per cent. and 16 per cent. has been reduced to about 1 per cent. under Pasteur's vaccine treatment.

Blackleg.—A very valuable and practical method of vaccination against blackleg or quarter ill was devised by Arloing, Cornevin and Thomas in 1879. By this method, a vaccine is prepared from diseased muscles by attenuating the virus by means of different degrees of heat. One portion is heated at 100° C., the other at 90° C., for 6 hours. That portion prepared at the high temperature makes the first or weaker vaccine, while that prepared at the lower teperature is the second or stronger one. The high temperatures attenuate the virulence of the virus. The spores, however, remain capable of germinating, but are not capable of exerting their pathogenic influence. The spores germinate and multiply slowly, so that little by little the newly produced virus immunizes the tissues. The immunity becomes positive in 8 to 10 days after the second vaccination.

The practical value of the protective vaccination has already been definitely established, and the immunity obtained persists for 3 to 12 months. In 1880, Arloing, Cornevin and Thomas subjected 13 head of cattle to protective vaccination before a Commission at Chaumont. When these cattle were later inoculated with virulent material, they all remained healthy; while out of 12 non-vaccinated animals 11 acquired blackleg as the result of

a similar inoculation and 9 of them died. Protective vaccination is now practiced with good results in those districts where the disease usually appears as an epizootic. Vaccination has reduced the number of cases so that the disease is only one-twelfth as prevalent as formerly.

Experiments, conducted by Kitt, showed that, by heating the diseased muscle for six hours at 97° C., a suitable vaccine could be obtained which would produce lasting immunity by one injection. This method of vaccination is especialy to be recommended, and has been used in the United States since 1897. The best seasons for using the protective vaccination are the spring and fall, but this may be regulated by local circumstances and by an observation of the time of year when previous outbreaks occurred. In the case of young stock, it is advisable to give a second vaccination in 3 months.

Anthrax.—In 1881, Pasteur conclusively established the fact that anthrax bacilli, when grown at a temperature of 42.5° C., will continue to actively multiply for a time, but no longer form spores. Further, he proved that the bacilli, when attenuated to a certain degree, will retain this degree of virulence if their cultivation is continued at body temperature. Finally, when the attenuated organisms are grown at 37° C., they may again form spores whose degree of attenuation will be that of the bacilli in which they develop: in this way, the virulence is fixed and may be indefinitely perpetuated. Upon this experimental work is based the practical method of protective inoculation against anthrax, worked out by Pasteur with the co-operation of Roux and Chamberland.

The vaccine is prepared by growing the bacilli in bouillon at a temperature of 42.5° C. After 12 days' growth, the cultures are attenuated to such a degree that they will kill guinea-pigs but not rabbits. Such an attenuated culture, when grown at 37° C., represents the second or stronger vaccine. After 24 days' growth at 42.5° C., the cultures are so attenuated that they will kill white mice but not guinea-pigs. Such an attenuated culture, when grown at 37° C., represents the first or weaker vaccine. Protective inoculation is carried out by the subcutane-

ous injection of the weaker vaccine, followed in 12 days by an injection of the stronger vaccine.

The immunization is based upon the principle that the first injection materially reduces the natural susceptibility of the animal, so that it will withstand without injury the second inoculation with the stronger vaccine. The immunity becomes positive in about 10 to 12 days after the second inoculation and persists for about one year. The effectiveness of the vaccine has been proved by Pasteur through experiments carried out before a Commission at Pouilly-le-Fort. Of 50 sheep, 25 were vaccinated with his two vaccines, and two weeks after the second vaccination they were inoculated with anthrax material, together with the 25 control animals. The results showed that inside of two days all of the 25 control animals died of anthrax, while all of the 25 vaccinated sheep remained alive. The results obtained from a large number of cases indicate that the death rate may be reduced from more than 90 per cent. to less than 5 per cent. if vaccination is practiced early.

Canine Distemper.—Canine Distemper is the most destructive and widespread infectious disease with which dogs are affected. The disease is inevitable for young dogs—especially highly bred and valuable animals—the mortality among some breeds reaching 70 to 90 per cent. It exists in all countries and occurs at any season of the year, although the spring and fall months are the most favorable for its production.

The etiology of this disease has occupied the attention of a number of bacteriologists since the time of Pasteur. Ferry (1910) and McGowan (1911) independently isolated the same bacillus (B. bronchisepticus), which was claimed to be the primary etiologic factor in the disease. The extensive investigations carried out by Torrey and Rahe (1913) in the Department of Experimental Pathology of the Loomis Laboratory, Cornell University Medical School, covering a period of 2½ years, have demonstrated that the B. bronchisepticus is the essential and specific factor of canine distemper.

Canine Distemper Prophylactic is used as an immunizing

agent against canine distemper. It is advisable to give three doses at intervals at 3 to 5 days and at least one month before probable exposure, in order to produce a thorough immunization. The prophylactic vaccine may be given at any time, provided symptoms of the disease have not appeared. If the vaccine is used after exposure and the dog contracts the disease, the severity of the symptoms will be lessened and the duration of the disease shortened. However, in vaccinating animals that are known to have been exposed, it is advisable to consider such animals as already infected, and to use the vaccine as outlined under Canine Distemper Treatment. The initial prophylactic dose contains 350 million of the specific organisms; the second dose 700 million, and the third dose 1,050 million.

Equine Influenza.—Equine Influenza has been known from earliest times under various names (equine contagious pleuro-pneumonia, stable pneumonia, shipping fever, catarrhal fever, typhoid fever, etc.), and its infectious nature has been recognized since the second half of the last century. The term "influenza" has been used since the beginning of the last century for all acute febrile affections of horses that spread rapidly and which have a pronounced miasmatic-contagious character.

Schütz (1887) undertook extensive bacteriological experiments to establish the nature of the disease, and indicated a diplococcus as the causative factor. This bacterium was later proven to be a streptococcus closely related to the streptococcus of strangles. It has been a much debated question as to whether this organism is found solely in strangles; and a review of the bacteriological investigations in strangles, influenza and contagious-pneumonia indicates that this organism predominates in these conditions. The very fact that contagious pneumonia and strangles so frequently occur side by side in the same stable, and are so often found following so closely symptoms of influenza that in the initial stage a differential diagnosis is often extremely difficult or impossible, has led the majority of observers to believe that these diseases are closely related.

Ferry (1912) isolated a streptococcus in pure culture from

the lower trachea in a case of typical influenza, as found in various stock yards and sales stables. He also obtained this streptococcus from cultures taken from the blood of horses suffering with this disease. The cultural characteristics of this microorganism are apparently identical with the streptococcus of strangles.

There is considerable evidence that these streptococci are alike, and they are apparently always found in influenza, strangles and contagious pneumonia. Moreover, there is little doubt that they are responsible for the severe symptoms manifested in these diseases.

There is very convincing evidence that the organisms, isolated by Schütz and Ferry, are only secondary invaders which accompany or complicate the disease; for, the very excellent work of Gaffky indicates that the primary causative factor of equine influenza is undoubtedly a protozoön which can be classed among the filterable viruses. In view of this fact, it cannot be expected that any positive immunity will result from the use of a bacterial vaccine. Nevertheless, it is quite certain that, without the secondary infection, the course of the disease is very mild. The vaccine, used for prophylaxis and treatment of the disease, is, therefore, entirely logical; for it protects animals from the more severe symptoms of the disease which are due to these secondary invading organisms.

Equine Influenza Prophylactic is used as an immunizing agent to prevent the complications which usually accompany equine influenza; such as fatty degeneration of the heart muscle, acute nephritis, intestinal catarrh, pleuro-pneumonia and septicemia.

It is always advisable to give 3 doses at intervals of 3 to 5 days for a thorough immunization. If the vaccine is used after exposure and the horse contracts the disease, the severity of the symptoms will be lessened and the duration of the disease shortened. However, in vaccinating animals that are known to have been exposed, it is advisable to consider such animals as already infected, and to use the vaccine as outlined under Equine Influ-

enza Treatment. The initial prophylactic dose contains 1,200 million of the combined organisms; the second dose, 3,600 million; and the third dose, 6,000 million.

Contagious Abortion.—The tendency toward natural immunity of cattle infected with contagious abortion has raised the question of the production of artificial immunity by various methods. Bang's investigations along this line indicate the possibility of securing such immunization in cattle as well as in sheep and goats. Mohler and Traum have been conducting a number of experiments on 5 large dairy herds in an endeavor to find a suitable biologic product for immunization and control of this disease. Suspensions of the Bang bacillus, killed by heating or carbolic acid, were injected. Over 250 head of cattle have been thus treated from 3 to 5 times with the product prepared from one strain of the organism. Since the different strains have been found to vary somewhat, other experiments have been conducted with suspensions made from a number of the most virulent strains. The outlook for prophylactic treatment along this line is somewhat encouraging, but a definite decision on the value of this line of vaccination must be deferred until the completed investigations of various workers are reported.

Prophylactic Serums.—The importance to the veterinarian of three diseases, in which prophylactic inoculation is carried out by means of serums instead of vaccines, necessitates a few words concerning tetanus, hog cholera and strangles.

Tetanus.—The early work of Behring and Kitasato on the immunization of rabbits, and the experiments of Tizzoni and Catani on mice and rats, formed the basis of the serum immunization and serum therapy for tetanus. The serum of horses is now exclusively used for this purpose, since Schultz found that horses and sheep may also be successfully immunized against tetanus and produce a potent, immune serum. Immunization is advisable and indicated in all cases in which tetanus is feared within a short time. Such a possibility exists particularly for contusions, which have become contaminated with dirt or manure; also, whenever tetanus is frequently observed, in certain

localities, to follow operations, including castration, docking of the tail, operations for umbilical hernia, various skin injuries, etc., and when, during the operation, careful asepsis cannot be carried out. Recent work in the field of medicine by Ashhurst and John have clearly demonstrated the fallacy of employing tetanus antitoxin subcutaneously. Their work has decisively demonstrated that the antitoxin should be administered in all cases both intraspinously and intravenously; and, further, that whenever possible, injection of antitoxin should be made in the sheath of the nerve supplying the affected part.

Hog Cholera.—One can only hope to secure practical results from a method of immunization against hog cholera which will afford protection against primary infection with the filterable cholera virus. After the demonstration of the latest facts concerning the etiology of the disease, by establishing the virulence of the filtered tissue-fluids of affected animals, experiments were undertaken to work out a suitable method of immunization; and already they have led to valuable results. The idea of using serum from hogs, which recovered from cholera, for immunizing purposes was first utilized by Preisz in 1897. According to the experiments of Dorset, McBryde, Niles and many others, hogs which acquire an immunity from an infection of hog cholera, when injected with virulent blood, produce a serum which protects susceptible hogs for at least 3 weeks against infection. The results in practice have proven very satisfactory; for, by the aid of this method, it is possible to considerably reduce the loss in herds which have been affected, and in many cases to check the outbreak abruptly. It is advisable to treat all herds, which are threatened by the infection, with the immune serum, and especially those in which the disease has already appeared. Moreover, the drove should be retained in the same place until the infection is eradicated. In case the disease appears again in the same herd, it is advisable to repeat the injection with immune serum.

Strangles.—Antistreptococcus Serum prepared by the use of the streptococcus equi is being used with encouraging results for the prophylaxis of strangles. For this purpose not less than 50 to 100 c.c. of the serum should be used.

Therapeutic Vaccines.—The list of diseases in which vaccines may be used from a therapeutic standpoint is a long one, yet the actual number of different types of diseases is more or less limited.

SUPPURATIONS.—The ever-present staphylococcus is responsible either primarily or secondarily for numerous suppurative conditions. Bacteriological examination has revealed the fact that these infections are of a mixed nature, the streptococcus being almost always associated with the staphylococcus, and, many times, the colon bacillus is also present. The use of a mixed bacterial vaccine containing the staphylococcus, streptococcus and colon bacillus finds its application in the treatment of infected wounds, including open joints, nail punctures, wire cuts and various surgical wounds; as well as abscesses, navel ill, poll evil, fistulous withers, etc. Thomason reports the cure of navel ill, fistulous withers and poll evil by the use of mixed vaccines. In treating suppurative conditions with vaccines, however, it is necessary to employ deep incisions and passive hypermia, in order to bring the vaccine into the focus of the disease.

CANINE DISTEMPER.—According to the work of Torrey and Rahe, the bacillus bronchisepticus is the infective agent essential for the transmission of canine distemper; but certain characteristic symptoms of the disease are due to secondary infection by other micro-organisms, notably the streptococcus and the staphylococcus. In treating the disease, therefore, it is essential that a vaccine composed of all of these organisms be used; and the treatment should be begun as soon as possible after the diagnosis has been made. Reports from a large number of veterinarians indicate that Canine Distemper Treatment is of distinct service if used early in the disease.

Animals, that are known to have been exposed to canine distemper, should be considered as already infected; and it is advisable not to vaccinate such animals with the prophylactic vaccine, but to use the Canine Distemper Treatment which has been found to produce better results in such cases.

A safe initial dose seems to be 175 million of the combined

organisms—very small or very young dogs receiving one-half of this amount—each succeeding dose should be increased by 175 million of the combined organisms. The doses are usually given at 2 to 3 day intervals, depending upon the reaction and general condition of the animal. Treatment should be begun as soon as possible after the diagnosis has been made.

Equine Influenza.—Bacteriological investigations indicate that the streptococcus is the predominating organism in strangles, influenza and contagious pneumonia. These closely allied diseases are now being treated with a vaccine composed primarily of streptococci, staphylococci and pneumococci, obtained from these diseases. A proper dosage of equine influenza treatment, which is a polyvalent vaccine, depends somewhat upon the indications in each case. A safe initial dose seems to be 300 million gradually increased according to the symptoms; colts receiving one-half of the adult dose.

Animals, that are known to have been exposed to equine influenza, should be considered as already infected; and it is advisable not to vaccinate such animals with the prophylactic vaccine, but to use the Equine Influenza Treatment which has been found to produce better results in such cases.

Pneumonia.—Numerous reports show that the course of croupous pneumonia is favorably influenced by the use of pneumonia vaccine, composed of pneumococci, streptococci and staphylococci. In delayed resolution after pneumonia, it is undoubtedly of great benefit. The initial dose is 500 to 1,000 million progressively increased.

White Scours an Enteritis.—Extensive bacteriological studies of Jensen, Poels, Joest and others have shown that white scours of sucklings is caused by the bacillus coli communis. A polyvalent colon vaccine has been used with very favorable results by many German investigators. This product is also very useful in treating enteritis and numerous other associated diseases of the abdominal organs.

Therapeutic Serums.—Before leaving the subject of therapeutics, mention must be made of tetanus antitoxin and antistreptococcus serum.

If tetanus antitoxin is employed intraspinously and intravenously, many valuable animals can be saved and the expense of the treatment materially reduced.

Antistreptococcus serum prepared by the use of the streptococcus equi, is being used with encouraging results by many foreign investigators in the treatment of strangles, pneumonia, purpura hemorrhagica and septicaemia. Many reports have been published in which the use of this serum has been followed by good results in strangles, influenza, bronchitis and pneumonia. In this country, Norton has reported the succesful treatment of strangles and influenza by the use of antistreptococcus serum.

Diagnostic Agents.

Tuberculin.—One of the most serious problems concerning the live stock industry is the increasing prevalence of tuberculosis among cattle and hogs. Tuberculosis often develops so insidiously that a long period often elapses before any symptoms are shown; and yet, during this time, the infected animal may communicate the disease to others in the herd. Tuberculous infection produces certain changes in the animal body, as a result of which it reacts to the second infection, or to the injection of the toxins of the tubercle bacillus, in a different manner than the body of an animal which has not been infected. This condition has been variously styled "allergy," "hypersensitiveness" and "anaphylaxis." Anaphylaxis manifests itself in pronounced inflammatory reaction, following the administration of small quantities of toxins which would have no effect on healthy animals. This hypersensitiveness is particularly evident with respect to the tuberculin which Koch prepared from glycerin bouillon cultures. Practical experience and observations have confirmed Koch's declaration that, on account of its specific action on the tuberculous animal, tuberculin is admirably adapted as a diagnostic agent. Tuberculin is the bacteria-free filtrate containing the metabolic products of the tubercle bacilli grown on glycerinated bouillon, and can be used for detecting the presence of tuberculosis in cattle and other animals. When injected into a tubercu-

lous animal it produces a rise in temperature, but not when injected into a healthy animal. The injections may be given subcutaneously in the neck, about midway between head and shoulder.

Mallein.—Infection with glanders produces a peculiar anaphylactic condition of the animal body, similar to that observed in tuberculosis. This condition manifests itself by an increased susceptibility to the toxins of the bacillus mallei, which is the organism that causes glanders. This hypersensitiveness is utilized for diagnostic purposes by administering the toxin of the glanders bacillus to the suspected animals, and the resulting reaction is considered as an index of the presence or absence of infection. Mallein is the toxic substance produced by the bacillus mallei when cultivated in the local glycerinated medium.

The diagnostic value of the mallein reaction has been confirmed by the practical experience of the last two decades; and, at the present time, it has been firmly established that mallein is an extremely delicate and reliable agent for the diagnosis of glanders.

In performing the test, ophthalmic mallein is by far the best preparation to use. It is the most sensitive; gives the most accurate results; is absolutely reliable; and is much more convenient to apply than is the subcutaneous test.

Conclusions.

In conclusion we desire to emphasize the following points:

(1) The veterinary biologic literature now on record is very meagre; and veterinarians ought to encourage the building of a reliable literature by reporting and publishing the results—both negative and positive—of vaccine therapy.

(2) In using vaccines for therapeutic purposes, one package containing 5 or 6 doses must not be considered a complete treatment; some cases may require 15 or more doses, while others may be benefited by 4 or 5. On the other hand, one package of the prophylactic vaccines does constitute a complete treatment.

(3) In vaccine therapy, every case must be individually

studied—just as when administering drugs—and the size, number, and frequency of doses must be adapted to the needs of the individual case.

(4) Furthermore, in treating disease with a vaccine, the necessary medical and surgical measures must not be neglected; for reliance should not be placed solely on the action of the vaccine.

(5) Vaccines have failed in many instances to give the desired results, because they were given in cases unsuited to vaccine therapy. Vaccines are specific in their action, and have doubtless often been used without correct bacteriologic diagnosis.

(6) Vaccines must not be expected to reconstruct tissues that have been destroyed by pathogenic organisms. Vaccines are not panaceas, nor a substitute for the veterinarian; but they do serve as a valuable adjunct in the therapeutic treatment of diseases.

(7) Vaccines play a most important rôle in veterinary practice in the prophylaxis of diseases.

(8) To be effective, vaccines must be timely and intelligently administered by a trained veterinarian.

(9) In order to secure the best possible results from vaccine therapy, the veterinarian should keep in touch with a scientific laboratory where the pathogenic organisms can be studied. The veterinarian and the laboratory must work together in the development of biologic therapy which, it is believed, is destined to revolutionize former methods of treatment.

National Association of Allied Horse Interests Starts a Publication.—During April there arrived at the Review office a copy of *The Horse Lover*, published by the National Association of Allied Horse Interests, at Providence, Rhode Island. The book is 10 by 13 inches, and contains upward of 40 pages. The cover page is adorned by a handsome pair of coachers, held by a young lady, who stands between their heads. Produced in natural colors, it makes an attractive cover page. The association publishing this monthly deserves the support of *all* veterinarians. The paper costs but 10 cents a copy, or $1 a year, and is worth much more than that amount. Write to *The Horse Lover*, Industrial Trust Co. Building, Providence, R. I.

HOG CHOLERA AND THE PRODUCTION AND USE OF HOG-CHOLERA SERUM.*

By Daniel E. Salmon, D.V.M., Butte, Mont.

The title of this paper, which was assigned me by your honorable secretary, is comprehensive enough to cover a volume of no mean proportions; but I hope that none of the members of this association is apprehensive that an attempt will be made to treat the subject exhaustively at this meeting. The most that the writer can hope to do is briefly to express his views in regard to certain points in which it is to be supposed that veterinarians are especially interested. That many subjects will be omitted and others but very inadequately treated, follows as a matter of course

Observations in Regard to Hog Cholera.

Hog cholera is a disease which during the last two or three years has received the most extraordinary attention, not only of veterinarians, but of farmers and many other classes of the community interested in the purchase and sale of pork products, the conservation of the nation's food supply and the reduction of the present high cost of living. The disease seems to have been unusually prevalent and malignant, and this, coupled with the advent of the serum treatment, has led to a feeling that the time has come when this contagion should be controlled and perhaps eradicated. Many of the hog-growing states, as well as the national government, are making preparations either to carry out experiments on a large scale or to begin the work of eradication. The subject is, therefore, one which at this particular time merits your attention, perhaps more than any other which is before the profession; and every veterinarian should be prepared to give expert advice in regard to all points connected with the

* Presented to Montana Veterinary Medical Association, at Bozeman, January, 1914.

disease, and to administer the treatment in the most approved manner.

Hog cholera is a peculiar disease in several respects. It is peculiar in the great susceptibility of hogs to the contagion, its rapid spread through herds and localities, and the malignancy of its action. In these respects it can hardly be compared with any other disease of animals than the cattle plague, which from time immemorial has been the terror of cattle raisers in most parts of the world.

It is, also, peculiar in that it is not communicable, by inoculation or otherwise, to any other species of animals. This fact makes it necessary that all the experiments made to study the disease and its contagion should be performed upon swine; and likewise all tests of the virus and the serum must be carried out with these animals. This has made the study of the disease and the production of the serum unusually difficult and expensive, since we must discard the small laboratory animals which may be produced and maintained in unlimited quantities and at little cost, because they are not available for the study of the disease or the testing of its products.

This disease is again peculiar because there is always, or nearly always, associated with it and present in the principal organs and blood a bacillus which is not the essential cause of the disease, but is so constantly associated with that cause that it is called the hog-cholera bacillus, and for many years was supposed to be the active and essential pathogenic agent. The writer is not in a position to state, even after all of these years of investigation, exactly which of the symptoms and lesions should be attributed to the hog-cholera bacillus and which to the filtrable cause of the disease. The hog-cholera bacillus is a pathogenic microbe which sometimes has considerable virulence, and its habitual presence in diseased animals is a complication which it would be very unwise to ignore.

If we go back to the early experiments of Theobald Smith, we will find that upon one occasion he inoculated a pig intravenously with 5 c.c. of a beef-infusion-peptone culture of the

bacillus made from an agar culture about a week old. Now as the filtrable virus is not cultivable in such media, there hardly could have been sufficient of it present in the liquid inoculated to produce a very intense effect. If it had any pathogenic action whatever, under such conditions, we should expect that the symptoms would be slow in appearing and mild in character. But in this case, on the contrary, there was a rise in temperature of 3⅜ degrees F. to 107 degrees within two hours after the inoculation. Two days after the inoculation there was a temperature of 107¾ degrees, and the third day the animal expired. That is a more rapid course than we should expect from the filtrable virus, even if a large dose had been given, so that we may, at least provisionally, conclude that the sickness and death of this animal were due to the bacillus and not to the filtrable virus. The autopsy was especially interesting from a diagnostic point of view. There was a general blush on the skin of the ventral aspect of the body, snout and lips. Spleen enormously enlarged, gorged with dark blood and friable. Superficial inguinal glands enlarged, edematous, with congested cortex. Bronchial and renal glands enlarged, partly hemorrhagic; gastric glands hemorrhagic throughout substance; the mesenteric and meso-colic glands all deeply congested throughout their substance. Blood thick, dark colored, coagulation slight, even after several hours' exposure to the air. Several petechiae on epicardium of right auricle. Kidneys enlarged, deeply congested throughout. The surface thickly dotted with minute red points. The papillae so deeply reddened that any extravasations would be unrecognizable. A few petechiae in pelvis. Bladder contained about thirty grams of urine tinged with blood. The whole mucosa of stomach deeply congested. In the fundus it was hemorrhagic with numerous patches of necrosed epithelium one-fourth to one-half inch across. The upper eight inches of the duodenum in same condition as fundus of stomach. Numerous red points scattered over mucosa of entire small intestine. The mucosa of caecum and upper colon very slightly congested, but the remaining two-thirds intensely so. Hemorrhage here and there sufficient to stain the feces with

blood. Cover glass preparations and cultures from splenic pulp revealed only hog cholera bacilli. In other experiments by subcutaneous inoculation of cultures he observed extravasations on auricular appendages of heart and on the lungs, with minute hemorrhages throughout the parenchyma of the lungs.

Now let us compare these lesions with those given by Dorset as those of acute hog cholera. He mentions red or purplish blotches of the skin, small hemorrhagic spots in the lungs, hemorrhages on the surface of the heart, spleen almost without exception quite large, dark and soft, kidneys with dark red points over the surface frequently reminding one of the speckling of a turkey's egg, the lining membrane of the stomach very much inflamed and red, frequently showing evidence of ulceration, the outer surface of the small intestine may be literally covered with bloody spots and the inner surface may be dotted with similar lesions. The outer surface of the large intestine may show the same hemorrhagic spots and the inner lining is frequently blood stained and has small areas of bloody extravasation. It is frequently found that the feces contained in the large intestine are bloody, due to hemorrhages. The lymphatic glands are enlarged and reddened, at times almost black.

Dorset recapitulates as the important lesions found after death in acute hog cholera:

1. Reddening of the skin. 2. Bloody spots in the lungs, on the surface of the heart, in the kidneys, on the outer surface and inner lining of the intestines and stomach. 3. Reddening of the lymphatic glands. 4. Enlargement of the spleen.

All of these, with the exception of hemorrhages on the outer surface of the intestines, were observed by Smith in the autopsies of acute cases of disease produced by inoculation with cultures of the hog cholera bacillus.

It is clear, therefore, that it not only is difficult to make a diagnosis, except by laboratory methods, between disease caused by the hog-cholera bacillus and that caused by the filtrable virus, when they occur separately, but that it is equally difficult to specify

precisely the part played by each in the complex which we designate hog cholera.

To illustrate the practical application of these facts in explaining the phenomena of hog cholera, as encountered in dealing with this disease, a recent experience of the writer may be related. A carload containing about 90 shotes, supposed to be susceptible to hog cholera, were received at the plant of the Highland Serum Co., to be used for the production of virus and for testing serum. About half of these pigs were placed in a pen at one side of the grounds supposed to be free from infection, the other half was placed in infected pens. It was not long before those in the infected pens began to sicken, and inoculations were made with blood taken from them, both immediately before and immediately after death. Now, although the disease in these pigs assumed a very violent form, causing death in about two or three days from the appearance of the first symptoms, and although the lesions were very marked and coincided with those which we consider characteristic of hog cholera, particularly hemorrhages of the skin, of the surface of the heart, of the lungs, of the outer and inner coats of the intestines, of the lymphatic glands, and of the kidneys, with enlargement of the spleen, we never succeeded in reproducing the disease by inoculation of the shotes which had been held in the pen supposed to be uninfected. Three or four of this lot contracted the disease by infection, but these animals appeared immune to subcutaneous and intramuscular inoculations with the blood of those which sickened spontaneously, and, also, to the stock virus which we had on hand. Pigs from this lot were then inoculated with fresh cholera virus from three different sources in which we have the utmost confidence, and in no case did cholera develop from these inoculations.

What are we to conclude from such an experience? In the first place, if the disease which developed spontaneously was cholera, it should have been inoculable by subcutaneous and intramuscular injection of the blood of the dying and recently dead animals. In the second place, if these pigs had been susceptible to cholera, they should have contracted it from the intramuscular

injection of one or more of the four strains of virus which were used upon them. If the disease was not cholera, and the pigs were insusceptible to cholera, is it not reasonable to conclude that it was the very similar disease caused by the hog-cholera bacillus, which is only transmitted by subcutaneous inoculation with difficulty, even when large numbers of bacilli are injected, and probably would not be caused by the relatively small numbers existing in the quantity of blood used for the inoculations? In each of the experimental inoculations, from two to four animals were injected and about forty inoculations were made altogether, so that the experimental evidence is not lacking as to the principal facts.

There is another interesting observation connected with this outbreak, which should be mentioned to complete the case. So many pigs were dying, among those in the infected pens, without yielding any results in the production of virus that it was decided to give the remainder the simultaneous vaccination. As a result of this treatment, the disease was arrested within a week from the time the animals were vaccinated.

The question now arises, Should this observation as to the result of vaccination modify our conclusions as drawn from the other experiments which have already been mentioned? This is not an easy question to answer. It must be admitted that, in hyperimmunizing hogs with large quantities of blood from animals in the last stages of cholera, we are introducing, in many cases at least, considerable numbers of hog-cholera bacilli, and that, consequently, the serum produced should in many cases have a protective action against the hog-cholera bacillus as well as against the filtrable virus. This would seem to be a consistent explanation of how the vaccination with hog-cholera serum and virus could arrest an outbreak of disease caused by the hog-cholera bacillus. Of course, a laboratory study of this disease would have thrown more light upon its nature, but would have required much more time than could be given to it.

Finally, if these pigs were immune to cholera, How did they acquire their immunity? They were from a ranch where there

had been no vaccination and no cholera, and, although the sows had been purchased within the year, it is not probable that they had been vaccinated.

Observations in Regard to the Production of Hog-Cholera Serum.

Potency.—Hog-cholera serum produced by either of the four methods in common use appears to be equally potent, and, so far as the user is concerned, there is no reason to choose one rather than the other. Some are claiming that the intravenous injection of the virus produces the most potent serum, but an examination of the experiments of Dorset and McBryde lends no support to this assumption. On the contrary, the most potent serum which they obtained appears to have been that of Hog 1383, which was "a slow immune." The serum from this hog was so potent that in the dose of 5 c.c. it perfectly protected 30 and 35-pound pigs from inoculation with 1 and 2 c.c. of virus, and even in the extremely small dose of 2½ c.c. for such pigs it enabled them to survive the inoculation, though they were sick as a result of it.

The intravenous injection of the virus, however, is practiced in most cases because of its convenience and rapidity; but with some hogs the ear veins are not suitable for injection, and these must be injected subcutaneously or intraperitoneally. Sera of the highest potency are obtained by each of these methods of injection.

Nature of the Serum.—The hog-cholera serum, from the observations of the writer, appears to be an anti-toxic rather than a bactericidal serum. This would be anticipated from the large dose of virus given in hyperimmunizing, and from the toxic effect which such doses generally produce, beginning soon after the injection and lasting for several days. In one experiment made by the writer by mixing the serum and virus, and leaving them in contact an hour before injection, 4 out of 6 animals developed cholera, and 2 of them with extraordinarily short periods of

incubation and violent symptoms. That is, the serum, by direct action on the virus, neither destroys it nor lessens its virulence; on the contrary, under such conditions, it appears that the virus diminishes or destroys the efficacy of the serum. Acting under this conviction, the Bureau of Animal Industry requires that the virus and serum be prepared in separate rooms and with an entirely independent equipment.

The Production of Serum Free from Contamination.—The producer of serum should use every precaution to avoid to the utmost extent the contamination of his product with microbes of all kinds, and especially those having pathogenic action. It is not so much of the laboratory technic that I speak, but of other conditions which affect the purity of the serum and which have not been so definitely specified.

It has been a common practice of some producers of serum to get the virulent blood for hyperimmunizing from animals which sicken in infected herds and the history of which cannot definitely be ascertained. In few cases of this kind can it be determined just how long the infection has been developing in the animal's body, and what the chances are of infection with other microbes than that which produces hog cholera. We know, for instance, that the hog-cholera bacillus is often present as a contaminating organism, and that as the disease approaches the chronic type and is prolonged, other microbes may gain entrance to the blood. The entrance of these contaminating microbes is no doubt facilitated by the ulcers of the intestines, which make their appearance in from ten days to two weeks, and which offer an open gateway for the admission of such micro-organisms; but even in the absence of these ulcers the blood may be contaminated with virulent bacteria which cause havoc in the injected animals.

In one case a pig, which had mild symptoms of cholera for a week or two, suddenly showed violent symptoms, with intense redness under the jaw and breast. This pig was bled, and the lesions shown at the autopsy being identical with those of acute hog cholera, its blood was used on three hogs—two receiving it

intravenously and one subcutaneously. The two which were injected intravenously, died from the injection, notwithstanding that they were already hyperimmune from having received large doses of virus, while the one injected subcutaneously had extensive abscesses wherever the blood was injected. This blood must have been very heavily infected with active pus producing organisms before the death of the pig from which it was obtained, and we are led by this experience to inquire what would happen if we hyperimmunized with blood which was contaminated with such microbes, but not in sufficient numbers to produce visible symptoms in the injected hogs. Would not some of these microbes remain in the blood of the hyperimmunes a sufficient time to contaminate the serum?

The blood of another pig which had contracted the disease from an infected pen was being used for subcutaneous injection when it was observed to have a peculiar appearance, the coloring matter separating from the serum as a granular, brick-dust like deposit. This blood, also, produced many abscesses.

As a result of these and other observations, no blood is used by us for hyperimmunization, unless the hog from which it was obtained has been infected for that purpose by inoculation, and we know exactly the period of incubation which it has passed through.

For the same reason, no doubt, the government requires that blood for simultaneous vaccination shall be collected only from hogs inoculated, which sicken by the seventh day and are ready to die by the fifteenth day.

Hogs for either serum or virus production should be free from abscesses, ulcers of the skin, patches of necrosis, or other similar lesions through which microbes might gain access to the tissues.

In general, it may be said that to produce pure serum and good, reliable virus, there must be both the most rigid aseptic technic in the laboratory, and the most careful selection and handling of the hogs from which these products are obtained. The hogs when bled for serum should have good appetites, a normal temperature and be gaining in weight.

With all the precautions which can be taken, the serum can hardly be expected to be sterile, but it will contain relatively few microbes and seldom produce abscesses. The virus will, undoubtedly, in many cases, contain hog-cholera bacilli, but as this is used in small quantity for the simultaneous vaccination, and as the serum will generally have anti-bodies which protect against this microbe, there should be few, if any, abscesses from this cause.

Caution Against Mixing Virulent Blood from Different Sources.—The blood from hogs affected with cholera often coagulates imperfectly, owing to an insufficient quantity of one of the constituents of the blood, the presence of which is necessary to produce this effect. It frequently happens, therefore, that after virulent blood has been defibrinated, if specimens from different hogs are mixed, there will be complete coagulation, whereas it would remain liquid indefinitely if not mixed. The clotting is due to the constituent which was lacking in one specimen of blood, probably the ferment from the leucocytes, being supplied by the other. The veterinarian should, therefore, avoid mixing virulent blood from different bottles, or otherwise he may cause its coagulation and find himself without suitable virus to continue his vaccinations.

Observations in Regard to the Use of Hog-Cholera Serum.

The Development of Abscesses in Vaccinated Hogs.—The chief cause of the complaints which we see in the agricultural press concerning the effects of vaccination is that it too often causes the production of abscesses. In a recent issue of the *Breeder's Gazette,* for example, a writer tells of the vaccination of his herd of 87 head, and of a neighbor's herd of 125 head, all of which showed abscesses on one side and "quite a few" on both sides. These abscesses continued to develop for "a third of a year" after the injection, though they did not affect the immunizing power of the vaccination.

A result such as this is assuredly very serious and emphasizes the importance of seeking the cause and taking every precaution to avoid it. Abscesses may undoubtedly originate by infection from two sources: one of these is contaminated serum or virus, the other is infection at the time of vaccination or soon after. In the case just mentioned, as the veterinarian at another time and from a different lot of serum vaccinated two other nearby herds, the animals of one being very dirty, without the development of abscesses, it seemed probable that the fault was with the serum or virus, or both. However, such a conclusion is not absolutely certain, since it is not impossible that a virulent pus-producing microbe existed on these two premises and not on the other two, and that the infection occurred at the time of vaccination; but the probability is in favor of the other hypothesis. It must be freely admitted that the operating veterinarian should not be blamed for all of the abscesses that follow vaccination, and that if a very large proportion of the vaccinated animals develop them, under ordinary conditions, suspicion must rest upon the serum or virus. However, it must not be forgotten that there are many obstacles to the carrying out of a perfect technic in the field, and that, with every precaution which is practical, some infections are liable to occur, either at the time of injection or soon afterwards, which will lead to the development of an abscess at the point of inoculation; but such infections should not occur in a very large proportion of the animals operated upon.

On the other hand, carefully prepared serum from animals in perfect health should not contain, at the time it leaves the laboratory, microbes which will produce abscesses in a very large proportion of the animals injected with it. Some animals, however, have a much greater tendency to abscess production than others and seem to be carrying the pus-producing organisms in their blood before they are vaccinated, all that is necessary for the development of an abscess being the irritation caused by the injection of the serum. Their condition resembles that of some persons in whom boils and larger abscesses develop with the

slightest provocation or even with no apparent provocation at all. Such a condition, of course, cannot be foreseen or guarded against, and, therefore, there will probably be some abscesses following vaccination, though a very small proportion, even if the most rigorous precautions are observed by both the producer of the serum and the veterinarian. But pure serum is often contaminated before it is used by allowing dust to get into it when the cork is removed, by pouring it into imperfectly sterilized basins, by allowing the wind to blow dust from the pens or yards into it, while the vaccination is in progress and by other acts of imprudence. For example, the writer has seen the operator sterilize his basins faultlessly, and then proceed to pick them up in such a manner that his not very clean thumb came in contact with the inner side and immediately reinfected them.

To show how little danger there is of producing abscesses with pure liquids under good conditions for injection, the writer has frequently injected 40 to 60 syringefuls of virus subcutaneously in one hog without producing a single abscess. Although the syringe held 20 c.c., and virus is more likely to be contaminated than serum, because it comes from sick hogs, while serum comes from well ones, it is only in a small proportion of the hogs that abscesses develop. So that with good liquids and proper precautions abscesses may be reduced to an insignificant factor in the general result.

The production of hog-cholera serum and virus is not the simple affair which many suppose it to be, however; it requires an extensive plant and must be guarded by every precaution that experience can suggest.

The Application of the Serum-Alone Method.—While the veterinarian will, in most cases, be employed to give the simultaneous vaccination, there are certain advantages at times in the use of serum alone. Quoting from a paper recently prepared by the writer, these advantages are:

"1. The protective action begins within a few minutes after the injection of the serum. 2. It has a curative as well as a

protective effect. 3. It does not cause fever or loss of condition, even with delicate animals. 4. Its use is free from the danger of introducing the cholera contagion to non-infected farms or ranches. 5. It stops the development of the disease in those animals which have taken the contagion into their systems within four days before the serum is given."

The one disadvantage inseparable from the serum-alone method is that the protection thus afforded is generally of short duration and, unless enough contagion is picked up from the premises to change the passive into an active immunity, probably does not last more than two or three months in the most favorable cases.

With reference to the first point, it is probable that the simultaneous vaccination, also, begins its protective action almost immediately, if the doses of serum and virus are in proper proportion. It often has been said that immunity is not completely established by this method for two or three weeks, but I know of no experiments to sustain this assertion. The fact that virus is injected at the same time as the serum and that the animal resists it shows that there is immediate immunity, and, so far as my experience goes, you may immediately expose the vaccinated hog in infected pens or in contact with sick hogs and it will resist the contagion.

However, if the doses of serum and virus are so adjusted that the hogs become sick from the vaccination alone, the small additional quantity of virus obtained from the exposure may be sufficient to turn the scale and kill the animal. In vaccinating, therefore, especially where animals are exposed to the contagion at the time, there should always be a surplus of serum, so that the vaccinated animals will not get sick from the vaccination, and will be able to dispose of the small quantity of virus which they obtain in addition by the exposure.

As to the second point, while serum certainly has some curative action, it is not very marked when but a single dose of ordinary size is administered. Its advantage in this respect is, consequently, not very great.

As to the third point, the simultaneous vaccination often does cause fever and loss of condition, but it should not do so, and will not do so, if the serum and virus are in good condition and the doses are properly proportioned.

The fourth point should be given great weight because it is very difficult to inject 50 or 100 hogs without losing a single drop of virus, or, for that matter, several times a single drop. A drop of virus may unexpectedly escape from the puncture despite all precautions, or the expansion of the liquid in the syringe from the warmth of the hand may force a drop or two from the point of the needle while the operator is waiting for the next animal. Then, there is always the danger that a very susceptible animal may develop the disease from the vaccination. In either of these cases there is an infected premises which might have been avoided by the use of serum alone.

The fifth point is one which, in the opinion of the writer, has not as much importance practically as is generally given to it and as it would seem to have from theoretical considerations. That hogs which have had the contagion in their tissues for two, three or four days before the simultaneous vaccination will be saved with the same certainty as those which receive serum alone, appears doubtful; nevertheless the difference may not be great, providing only that a small dose of virus be used in the vaccination. The government experiments indicate that there is little difference in the results of the two methods under such conditions.

There is, consequently, but one apparently serious disadvantage connected with the serum-simultaneous treatment, as compared with the serum-alone, and that is the danger of introducing the contagion upon uninfected premises. This generally will be outweighed by the owner's desire for permanent immunity; and if he vaccinates all his hogs, as he should, the question of contagion does not greatly concern him, since there are no susceptible animals to be affected by it, and ordinarily it will soon disappear.

The time of year should have considerable influence in deter-

mining if serum alone is admissible. If it is early in the season, with a long period before slaughtering or marketing, the simultaneous treatment would be almost indispensable; while late in the season, with but a month or two to slaughtering time, serum alone would be sufficient.

The Application of the Serum-Simultaneous Method.—As already mentioned, the requirement of permanent immunity is the principal indication for the adoption of the serum-simultaneous method in preference to the use of serum alone. This long-time immunity is so desirable that it generally outweighs and overshadows the slight disadvantages which are or may be connected with the serum-simultaneous method, and makes the application of this method indispensable. Breeders wish to insure their hogs against loss by cholera, during life if possible, and, therefore, must begin by so immunizing the young pigs that they will retain the immunity for a long period. The immunization of young pigs is, consequently, a subject to which we may profitably give our attention at this point in our discussion.

The investigators of some of the State Experiment Stations have observed that the pigs of immunized mothers are very resistent to the hog cholera virus, and have concluded that such pigs need no protection until about weaning time. It has even been proposed to reinforce this natural immunity by the injection of a small dose of virus alone at the age of three or four weeks, and to reinforce it again, in the same manner, at a later period. This method, if reliable, would be the means of obtaining immunity at a much lower cost than by the serum-simultaneous method, since only two small doses of virus are required. Our experience in managing several hundred pigs from immune mothers, during the past year, is not very favorable to this method. A considerable number of these litters showed sickness when about three weeks old, and it became necessary to vaccinate them. It is true that the greater number of litters resisted the contagion until weaning time, or, at least, were not acutely affected, but some of these appeared to be retarded in their growth and unthrifty as a result of a chronic infection.

There was one lot of 26 pigs in a pen adjoining an enclosure containing some sick hogs, and it was thought best, on account of this exposure, to give them the simultaneous vaccination. They weighed 10 to 15 pounds and were given ¼ c.c. of virus and 10 to 15 c.c. of serum each. Six of these pigs contracted cholera and died in from 13 to 25 days after vaccination, and the indications were that more would have been lost if they had not been given another dose of serum. Perhaps it should be explained that this serum was not of our manufacture, though it seemed to be good commercial serum; however, the point which I wish to emphasize at this time is not the insufficiency of this serum, but the lack of resistance of these pigs. They were not only unable to withstand a dose of virus without serum, but their resistance broke down even when reinforced by a dose of serum.

From these observations it appears wise to treat pigs at about the age of ten days with either a dose of serum alone or with the simultaneous vaccination.

The administration of carefully graduated doses of serum and virus to small pigs, when vaccinating by the simultaneous method, seems to be a matter of considerable importance. The dose of serum usually recommended is 1 c.c. per pound up to ten pounds, and 10 c.c. for those weighing from 10 to 20 pounds. This formula has never seemed quite satisfactory to me, for if the dose should be in proportion to the weight, and 10 c.c. is required for a 10-pound pig, it is hard to see how 10 c.c. can be sufficient for a pig of twice that weight.

The dose of virus recommended has usually been ½ c.c., possibly because this is the smallest quantity which most of the syringes used for this purpose will measure. But ½ c.c. of virus is too much for a pig weighing, for example, 5 pounds and which gets but 5 c.c. of serum. The proportion of virus to serum in this case is as 1 to 10, which is the same as that recommended in the government bulletins for a 50-pound hog—in which case it is 20 c.c. of serum and 2 c.c. of virus. The tendency has been to recommend a smaller dose of virus even for large hogs than

that used by the government investigators, some placing the dose as low as ½ c.c. for all hogs up to 150 pounds, the relation between virus and serum being in the case of the 150-pound hog as 1 to 100. An intermediate position seems to be better for the present than either extreme, and we, therefore, recommend 1 c.c. of virus and 35 c.c. of serum for hogs weighing from 50 to 75 pounds; and this ratio of 1 to 35 or 40 we believe to be all right for hogs of over 50 pounds. Young pigs are so much more susceptible, however, that with those of two to three pounds we make a ratio of 1 to 100; with those of 3 to 6 pounds, 1 to 80; with those of 6 to 50 pounds, 1 to 50.

It is true that the government investigators have used more virus and less serum than we recommend, and, consequently, their ratio has been much narrower; but it has seemed to us that in field work, and especially here in the Northwest, where until recently there has been little cholera and the hogs are very susceptible, it is better to reduce somewhat the dose of virus and to increase that of serum. In our experience we have obtained immunity without producing disease by this dosage, while with the other there were too many sick and too many stunted hogs as a result of the vaccination.

For vaccinating young pigs, the dose of virus which we recommend is 0.05 c.c. for those of 2 to 3 pounds; 0.10 c.c. for those of 3 to 6 pounds; 0.20 c.c. for those of 6 to 10 pounds; 0.30 c.c. for those of 10 to 15 pounds; and 0.40 c.c. for those of 15 to 25 pounds. The ordinary syringe will not accurately measure these small doses, and, therefore, we have had constructed a special syringe with which they may be administered with great exactness. This syringe has a long glass barrel of small calibre that has a capacity of but one cubic centimeter, so that twentieths of a cubic centimeter, or about the equivalent of one drop, are easily injected. The syringe is well armored with metal to protect it from breakage and at the same time permits the operator to see whether it is completely filled with virus or partly with air. The great objection to the all-metal syringes for

virus is that you cannot see whether or not they are completely filled with virus and, consequently, the dose may or may not be accurately measured.

Returning now to the immunization of pigs, the writer is inclined to recommend that they be given the simultaneous treatment when ten or twelve days old, preferring this to the serum alone because of the longer duration of the immunity, and that they be given a second simultaneous treatment when 3 or 4 months old. It is generally admitted that the immunity which young pigs receive from the simultaneous treatment lasts but a few months, and that a second treatment is, consequently, required. This second treatment should be late enough, so that the immunity which is derived from it will last during the life of the animal, and while the best time for it has not been very definitely fixed by experiment, it is not far from that stated above.

At the first immunization the pigs would receive 8 or 10 c.c. of serum and 0.1 to 0.2 c.c. of virus; while at the second treatment, if three months old, they should weigh about 50 pounds and receive 20 c.c. of serum and 1 c.c. of virus. The total quantity of serum and virus used per hog would, therefore, be about 30 c.c. costing 60 cents. If serum alone is given at ten days, the dose would be 6 c.c., and the simultaneous treatment should follow at about two months of age, the animals receiving about 20 c.c. of serum and 0.4 c.c. of virus. The cost in this case would be about five cents less than in the former, but there would be more danger of the immunity disappearing before the animals were slaughtered.

These few observations in regard to hog cholera and the production and use of hog-cholera serum are offered for your consideration because they relate to problems which recently have engaged our attention and which are of a practical nature. There may be some things yet to learn in regard to this disease and the application of the serum treatment; but it has been clearly demonstrated that this treatment as now recommended is efficacious in protecting hogs from the ravages of this contagion without having any serious disadvantages when properly applied.

SOME COMMON DISEASES OF ANIMALS AND THEIR TREATMENT.*

Dr. J. F. DeVine, Consulting Veterinarian State Department of Agriculture, Goshen, N. Y.

After such a splendid practical paper on the horse as Lieutenant Shiverick has given us, I think it is apropos for me to discuss ailments of the horse. During the meeting yesterday, last evening and this morning, it seems to me that I have talked to at least one-third of the people here on contagious diseases, such as rabies, tuberculosis, hog cholera and the like. I am quite certain that Dr. Moore and Dr. Wills have talked to the other two-thirds; therefore, I think I shall evade all these infectious diseases and attempt to enumerate some of the simple things that occur on the farm.

I appreciate the fact that I have a pretty exacting audience and I know if I say much about the horse I shall have to be careful as to how I say it, as there are so many experienced horsemen present. But there are perhaps some present who have taken to the farm and horse industry of late and who would appreciate some advice. It is not necessarily the farmer who always makes the great horseman, or the country boy who always makes the great farmer. We heard last night from Mr. Wainright some things that he has put in operation on his farm, rather late in life some might say, but I am sure his results would do credit to a seasoned farmer. To illustrate how a man can be handicapped in youth and still become great along certain lines, they tell a story about Colonel ————. When he was a boy his father did not keep horses, and the Colonel was very anxious to have a horse, so he induced his father to buy one. He was later telling a friend one day of his great desire to own some good horses and

* Presented to the New York State Breeders' Association, at Syracuse, February, 1914.

get in the horse business, and related how he went with his father to purchase their first horse. He said: "I remember when father took me one day to a livery stable and we saw there one of those spotted horses. We had heard that such colored horses were circus horses, so father asked the liveryman if the horse was a circus horse, and the liveryman assured him that it was. So we thought this would be a fine horse to have. Father bought the horse, harness and wagon for such a reasonable price that he was quite pleased. After the sale was made and we were about to start home the liveryman said, 'Just to show you this horse is a circus horse I will whisper to him to go lame in the left fore leg and he will do it.' And, sure enough, the horse went lame in that leg all the way home." [Laughter.] Of course the Colonel knows to-day what the liveryman did to his father, and no one could sell that kind of a circus horse to the Colonel now; but it shows how little experience one may have in early life and still become a great horseman or a great farmer later.

In beginning the discussion of the diseases of animals, it might be well to start with the colt. I recognize the fact that there are several breeders here, that to enumerate to them the way to care for a mare in foal and the care of the new born colt would be something perhaps that they already know. But again there may be others who have had little or no experience in these matters. Briefly, we think the mare will do best, as you know, if she has regular work or exercise. If your brood mares can not be kept at work of a reasonable kind, then they should have a roomy paddock, or, better, be turned to pasture; and when the colt comes, remember it needs perhaps more attention, more artificial aid, so to speak, than any other domestic animal. We like to see that the various organs are normal. Pay special attention to the intestinal tract. The little colicky pains the colt ofttimes develops ordinarily are not serious, but we are sometimes called to see colts that practical horsemen have been fussing with perhaps all day or part of the night with a little paregoric or castor oil, and still the colic has not been relieved. It is true that ordinarily these simple remedies with good nursing will relieve these intestinal

irritations; but there is another condition that happens a little oftener perhaps than is generally recognized, and that is a displacement of the bowels. It is scientifically termed volvulous or intussusception. This is a condition where the little bowels become twisted, or one part slips into the other, as if we turn the finger of a glove partly inside out. A very practical way of relieving this in most cases is by what we might term "high enemas." Every veterinarian and even stockmen should have one of the latest improved stomach tubes and pumps, and by using this stomach tube and pump and gently forcing water into the bowel, at the same time raising the hinder part of the colt, we can ofttimes so dilate the bowel that the tube may be passed in several feet and water carried well into the bowel, which in turn releases the imprisoned part by dilation of the bowel. We notice relief from pain and complete rest as soon as our efforts have been successful. Another thing that horsemen sometimes overlook after they have given these little home remedies, and that is to see that the mare's udder is kept well milked out so that the little colt cannot get too much to eat for a period of, say, 24 to 48 hours. Giving the weak intestinal tract rest is just as essential as other treatment.

A thing that came up at one of the Farmers' Institute meetings recently was relative to the infection of the umbilical cord at the time of birth. A certain dealer and breeder had said that it was wrong to tie the umbilical cord because there was a drip from the bladder that would be cut off. Unfortunately, this man knew just enough anatomy to be harmful to him. He was right about the opening to the bladder, but wrong about not tying it up. The communication from the fœtus' bladder into one of the sacks or membranes that covers it in utero is supposed to close at birth, the same as certain other things happen at birth. The point to be kept in mind is that the umbilical cord must be tied antiseptically; we must be clean about it. We should be just as clean in this as a physician would be in tieing the navel of a new born child. If the cord has been ruptured before we have an opportunity to tie it with a clean ligature, it would be well to tie it pretty

well up toward the abdomen and place the end of the already broken cord in tincture of iodine.

Assuming that our colt does well and is well nourished by the mother and gradually gets to eating grain, we see that it is housed from the flies during the summer time and that its little feet are kept properly leveled, and it soon reaches a period where its teeth are to be given attention. Some people argue that we need not give the colt's teeth attention. This would depend largely upon the class of animals we have to deal with. In the big, heavy horse his teeth do not need as much attention as the lighter, nervous one. If we take a close-jawed, heavy-muscled horse of a high nervous type, we will find that the least bit of enamel or sharp point that strikes against the jaw will cause him to be bad tempered. This is not so with the phlegmatic loose-jawed drafter. We also like to remove the supernumerary or wolf teeth, as they are termed, not because there is any danger of making them blind—this theory is as antiquated as hollow horn or wolf in the tail—but for those horses we like to have carefully fitted and with a nice light mouth, the mouth that guides well, one of the very first things we do is to remove all objectionable irritants. Therefore we remove these little teeth that are in the way of the bit and that are easily inflamed and make the mouth irritable. We don't do it in the old barbaric way of taking a chisel and knocking them out; we have them pulled out and have it properly and humanely done. Breeders recognize the fact that a four year form is usually the hardest year on a colt. This is so, and in a measure is due to the trouble they have in shedding their molars. Horses shed what we term the pre-molars, or the first three molars, just the same as they shed the incisors, and we sometimes notice the colt chewing his food and spitting it out again, all due to the fact that these little caps or teeth become partly loosened and catch in the cheek and food and hay is packed under them and cause pain and annoyance. A few minutes' work of proper dentistry will remove this trouble and do more for the colt than he can do for himself in several months. By saying that the horse's teeth need attention, don't understand me to say that every

horse's teeth need attention. Beware of the fakir who comes along the road and tells you that every one of your horse's mouths needs attention. He wants your money and will be out of your sight as soon as he gets it. A man who will employ a traveling professional man *ought* to be fleeced. No professional man with ability or a conscience needs to travel the road and solicit trade. If he amounts to anything he has a practice at home. But if the horse's teeth do need attention there is not any one thing that will do more good than proper dentistry.

As to feeding and watering horses, we should keep in mind that the horse has the smallest stomach for its size of any of our domestic animals. It will not stand the changes that many of our other domestic animals will stand. Therefore, if you must change feed always remember that you must change it very cautiously, always giving a smaller amount of the new food. It is the same when you put in new oats or new hay. If the breeder and the farmer would be more cautious about changing the feed, the veterinarians would have less to do in the treatment of colics, and it would be just as well, since there are many other things much pleasanter to do than to stand around and watch a poor horse suffer with colic. As to watering your horses, some people ask, should a horse be watered before he is fed or after? It does not matter if you will only do it consistently. Experiments along this line have proven that if we establish a custom it does not matter which way we do it. Any of you know that if you have been in the habit of watering your horses after feeding, if you offer them water before feeding, they will not take it. It is simply a physiological custom that the stomach has established and it wants it that way. With regularity, good care, good housing and good grooming, your horse ought to and will do well.

There are certain things that we should guard against to-day with horses the same as we would with pigs or cows. You know great care is being taken when purchasing animals, particularly pure bred animals, to determine if they are free from tuberculosis, infectious swine diseases, etc. We should use the same precaution in examining our horses carefully before purchasing

as to glanders. Glanders is a very deadly disease in the breeding stable. It is often times very virulent in its character and not alway easy to stamp out. Therefore, when we are examining animals as to their soundness we should keep in mind glanders and farcy.

There are also some accidents and ailments that occur on the farm, such as cuts, colic and the like, that every farmer and every stockman should be able to give at least first aid. Oftimes people become very excited if an animal cuts itself, and they will run for some dirty cobwebs and stick them on, and later the wound festers, as they term it, and finally they may need the services of a veterinarian. If they had used a little better judgment at the time of injury, perhaps the wound would not have amounted to much. Always be very clean and do not use irritants on fresh wounds. If there is a great hemorrhage, ordinarily this can be checked by wrapping some cotton and a tight bandage around the parts, and then have your doctor come and dress it.

As to colic. There are different forms of colic—some colics that are preventable, some that are not. A change of feed usually develops a very dangerous form of colic, termed "acute indigestion." If you find your animal has eaten an unusual quantity of food or a moderate quantity of strange food, and develops pain and bloats, the quicker you can get expert service the better. We know to-day that the thing to do in most of these cases is to tap the animal and let the gas out of the intestines, since when a great amount of gas accumulates in the stomach and intestines, the animal if not relieved will die either from shock due to rupturing of some part of the stomach or intestines, or literally smother to death from the pressure of these organs on the diaphragm and that in turn upon the lungs. If the stomach is considerably involved, the thing to do is to empty it by passing a stomach pump. This of course requires an expert, but actually works wonders in cases where it is indicated. In addition to relieving the cause, we sometimes add a little stimulant in the way of whiskey or the like.

The cause of another form of colic is an impaction of the bowels, due to dry bulky food, and this ofttimes while less intense

in character is more dangerous than its mildness at the beginning would indicate. Oils and cathartics are the agents to be employed to remove the cause in such cases.

We have other forms of colic, due to disease in the intestinal tract, particularly the blood vessels, and colics due to calculus (stone in the bowels). These forms of course are not under the control of the owner or care-taker.

Another thing which we notice so much among stockmen is the way which they drench their horses. Every now and then, from carelessness or brutality in drenching, we get a condition which we term " mechanical pneumonia." This could be avoided if proper precaution is taken in drenching the animal. Why, you see some men put a rope in a horse's mouth and pull its head up as if they meant to pull it off, and then stick a big bottle filled with medicine in its mouth, and never taken the bottle out until it is empty. Could *you* swallow with that big bottle in your mouth? Perhaps *you* can, but a horse can't do it. You may be more accustomed to it. (Laughter.)

Severe colics, particularly acute indigestion, sometimes brings on a condition that the doctor may be blamed for, and that is laminitis, commonly called founder. After an animal has a severe attack of colic, which is necessarily attended with great rolling about and pain, and is then allowed to stand in a draught and cool suddenly, on attempting to move the animal later we may find that it can scarcely back up or move about. This sometimes can be avoided by properly covering the animal as it begins to get quiet and cool off, or by walking it gently about, but sometimes it occurs even with all these precautions. You know the idea used to prevail that if a horse was once foundered it was never any good again, but we know now that if properly treated and taken in time we can in most cases relieve the condition so promptly that the animal is as good as ever in every sense of the word. Whenever you have a foundered horse, don't deceive yourself by thinking the trouble is in his back because he can't back up, and waste time by rubbing magic liniments and oils on its back before sending for a doctor, but send for your doctor

immediately, get poultices on the horse's front feet and place his feet in a tub. Your poultices may be bran or anything that will make a cushion to stand on and hold moisture. Fill the tub sufficiently to cover the feet well with either very hot or very cold water. whichever you can properly attend to. If I go to a stable where there is a foundered horse and I feel that conditions are not right for the water to be changed often and kept warm, I then prefer to get a cake of ice and keep the water very cold. There is not much difference in the action between extreme heat and extreme cold, excepting that the heat relieves pain quicker and in case of founder the animal will make greater progress the first few days. Therefore, I prefer hot water to cold water when I feel that it can be properly attended to. The question is sometimes asked: " Should we remove the shoes? " Some veterinarians do and some do not. I think it is best not to remove them. My reason is that there is congestion in the foot and with the soaking it must necessarily expand or swell, and it is my opinion that with the shoe left on we are less liable to have a drop sole, as it assists to hold the junction of the well and sole in apposition. When your veterinarian arrives, do just as he tells you and don't listen to everybody's advice. If the veterinarian knows his business it will only be a matter of a week or ten days before your horse is pretty well relieved, and in another short period he will have him at work for you again.

There are other diseases that need prompt treatment, and I would like to call your attention to one or two of them. For instance, lymphangitis, commonly called " Monday morning leg." The reason for calling it Monday morning leg is that it usually occurs after an animal stands in the stable a day or two, like over Sunday or a holiday. Then we often find one of the legs, usually a hind leg, all swelled up. The common error is to think that the horse has injured the leg during the night, and then apply liniments and irritants. Liniments simply aggravate the condition. What you should do is to send for a doctor at once. as he can do more for you in the first 24 hours than he can in three weeks after the swelling of the leg has become organized.

If called early, your veterinarian can get the bowels and kidneys active and do up the leg in hot packs, and in three or four days the pain will be sufficiently reduced so that the animal may be moved, and moving in this ailment is one of the most valuable aids in relieving the condition. We would not think of driving a horse that had a badly sprained leg all swollen up, but we want to drive one with lymphangitis just as soon as we can move him, and then, of course, properly care for the leg after driving.

There is still another disease that needs equally as prompt attention, and that is what the older men used to speak of as *spinal meningitis*. We really do not see many cases of spinal meningitis. We do have epizootics of the so-called cerebro-spinal meningitis, but what the older men called spinal meningitis is usually azoturia. We usually see these cases on a Monday morning, or a morning after a holiday. It occurs in the well nourished, well kept horse that is regularly worked for exercise and then stands in a day or two. The longer they stand in the less liable they are to have it. The animal is then taken out and and driven and feels fine and perhaps plays in the harness, and after going a little way we notice that there is an unusual perspiration, or perhaps an increasing lameness in one of the legs—usually a hind leg—the animal knuckling over at the fetlock. A well meaning driver will immediately think of getting the animal back home. What they should do is to stop the horse right where it is, cover it up and keep it quiet. Every step taken after the disease begins to develop increases the danger of paralysis and brings the animal nearer to death. I would rather treat one standing up in a snow bank than in a parlor after he gets down. If there is a shed or stable near by, lead the animal to it and put plenty of blankets on it, keep the animal just as quiet as possible and send for your veterinarian. This is one of the deadly diseases that is largely preventable by giving the horse bran mashes on Sundays and holidays, and by knowing the character of the disease and stopping the animal as soon as any symptoms are shown.

RES JUDICATAE.

VETERINARY EDUCATION.*

By Chas. H. Higgins, B.S., D.V.S., F.R.M.S., Ottawa, Can.

History does not record in detail the early progress made in the study of diseases of animals, nor the means taken to combat or prevent their recurrence. We are aware, however, that something over two thousand years prior to the Christian era great stress was laid on the proper feeding of animals that were desired for work. These rules for feeding do not materially vary from what would be considered proper to-day. At this early period, "a doctor of oxen and asses" was accorded a legal fee as was his *confrère* who treated the ills to which human flesh is heir, and there was always a penalty in the event of his being unable to perform a cure. This penalty, however, was less severe than that prescribed for failure in the treatment of the human being.

To Columella,† a veterinary surgeon who lived during the first century of the Christian era, belongs the credit of insisting that hygienic surroundings, isolation and proper food were necessary adjuncts in dealing with sick animals. This it seems is prior to any reference to a similar procedure for the control of diseases among human beings.

The Hippiatrika‡ is preserved to us through the foresight of Constantine§ and "reproduces the written opinion and views of the experts of the Eastern Roman Empire, the birthplace of the veterinary art or certainly of veterinary literature, and it is because it represents what men in our profession fifteen centuries ago thought on subjects which are engaging our attention to-day

* *Reprinted from The Canadian Medical Association Journal.*

† "The Early History of Veterinary Literature and its British Development." Major General F. Smith, C.B., C.M.G., F.R.C.V.S. (*Jour. Comp. Path. and Therap.*, Vol. XXVI, 1913.) L. J. Columella in his writings dealt exhaustively with the care, management, breeding and feeding of domestic animals. He was the first to point out the necessity for the isolation of affected animals when contagious disease appeared.

‡ *Ibid.* The compiler of the Hippiatrika is unknown, but it consists of a summary of the writings of the authorities in veterinary science up to that time.

§ *Ibid.* Constantine the Seventh, Emperor of the later Roman Empire, with the designation, "Porphyrogenitus," (born in the purple), lived from 911 to 959 A. D.

that their work becomes of such interest and value." This work, however, does not now exist in its original form, but copies are available for reference. The data included in the manuscripts which have been preserved indicate that these copies do not agree in all particulars, doubtless the result of the work of copying being undertaken at different periods by several individuals, each of whom, either by design or unintentionally, made changes in the transposing of the text. The copying at this early time was necessarily performed by hand and naturally lent itself to many errors, some of which, though minor in themselves, materially changed the purport of the author. The writings of the early veterinarians which have thus survived the vicissitudes of time and are now available in a very imperfect form, indicate that the views then held on many ailments were not widely different from those obtaining in this enlightened age. The authors of the Byzantine period contributed much to the knowledge of the science, and it seems that veterinarians were then familiar with many of the contagious diseases of animals, although their knowledge was founded on a less sound scientific basis than is ours to-day. That these men were esteemed, is evidenced by the positions of trust which they held and the confidence with which their teachings were accepted. After Constantine, a considerable time elapsed during which it is evident that many of the writings were lost, and in addition this territory was invaded by the Mohammedans who carried such veterinary teachings as were found to Arabia, and, thanks to the employment of translators, usually learned Jews, such of the writings as were available were translated from the Greek into the Arabic and thus preserved. To similar translators we are indebted for the subsequent translation from the Arabic into the modern languages. This transposition is in a large measure responsible for the existence of the earlier works to-day, as very few are now available in the language in which they were originally written.

Notwithstanding these early historical data, we must look to the advances during our own time, with a view of ascertaining whether we are doing our utmost to advance the art and science

of veterinary medicine, for history is indelibly recording the results of our efforts for others to read, after we as individuals have ceased to worry over ideals, and when collectively we will be but a memory, known only by the writings of those who have been foremost in raising the educational standards of our calling.

From time to time the art and science of dealing with the diseases of animals has progressed; nevertheless, many were the occult devices employed to overcome disorders which now yield to very simple medication. By these occult devices, great cures were claimed; and then as to-day the public were as ready and eager to follow any self-styled healer who catered to the frailties of human nature either by ministering to their personal indisposition or to the illnesses of their live stock, for in many instances the health of the live stock was then as now more important than the health of members of their own families. Such practices have been responsible for the existence of empirics and charlatans, and who may say that their exploitation of the public has not been for the general uplift and improvement of educational methods? Who would dare, in the light of our present knowledge and the practices of to-day, to say that Paracelsus did not exert an important influence in stimulating those interested in the practice of human medicine to eliminate much of the mystery which then surrounded this art? He simplified many of the methods of dealing with disease, although it is generally admitted that he was an empiric. The existence of empirics and charlatans in the veterinary medicine of our day has exerted a very important stimulus toward the improvement of the courses given by veterinary colleges. Some veterinarians are continually waging war with a view to securing the elimination of empirics by legislative enactment, and this I believe to be a step in the right direction. A few are exceedingly jealous of the standing and success of the self-educated empiric, but I may state that the trained veterinarian who is unable to successfully practise his profession in the face of such empirical opposition has either entered the professional ranks improperly equipped, or else he has endeavored to engage in a science for which he is by temperament

and training wholly unfitted. We have passed the era when superstition reigned supreme and are now enjoying the fruits of a higher civilization than the world has ever known, expressed by the increased facilities granted for all forms of educational advancement. Veterinary science is coming to the fore, and ere long will assume the importance which the increasing value of live stock will demand.

Outstanding men appear from time to time who are courageous, yet sufficiently optimistic, to faithfully trust in the ultimate success of their efforts. Such men may bend their energies to the finding of a new land, the colonizing of an arid waste, the cultivation of the hitherto unknown, the discovery of new scientific facts, the practical application of existing knowledge, or they may stimulate others to a desire for familiarity with subjects formerly considered of little importance. All of such are pioneers and may prove martyrs, yes, heroes, to the cause of their choice, and time will emblazon their names in the eyes of future generations as indelibly as those of any hero of mortal conflict. Following the pioneers, there is usually a period of recrudescence, during which the real development takes place, and among the men who accomplish this development are staunch men of the pioneer type. These men under other circumstances and environment would doubtless be pioneers, and yet who may say that their efforts in building upon a solid foundation are not the equal of the true pioneers, though less spectacular?

Veterinary education, commencing as it did at a very early period from our standpoint, possessed its pioneers whose names are more or less familiar to us all. Others have endeavored to complete the tasks which they commenced, in some cases under very arduous circumstances, and the little advancement made has been comparatively recent. But few men were concerned with this advance in North America, and most of them have gone beyond, yet those still with us are respected among their professional *confrères* and by others who have enjoyed their acquaintance.

We, in Canada, are most intimately concerned with the status

of veterinary education within our own borders, as we are more vitally affected by conditions which reflect upon our own energies, than by circumstances which have but a remote bearing on our well being. With this reflection we must carefully consider what the great universities of this land are doing for veterinary education, and determine whether or not they are living up to the traditions of the individual institutions in other phases of advancement. We can justly lay claim to the first institution which considered it necessary to extend the course of study from two to three years, at a time when other colleges believed two years sufficient in which to give an adequate training. This one act on the part of the far-sighted dean of the School of Comparative Medicine and Veterinary Science of McGill University, Dr. D. McEachran, has borne fruit, and there is not now a recognized school on this continent or elsewhere which considers less than three years adequate, in fact, a great many colleges whose courses now extend over four years are considering the advisability of adding another year to their curricula. Such is the trend of modern thought along all educational lines, and to those who are assisting in the maintaining of lowered standards in any of the veterinary colleges, there should be extended the severest condemnation from their colleagues.

We cannot go farther without mentioning the name of Professor James Law, so long connected with Cornell University, who successfully placed veterinary science in New York State, from a legislative and educational standpoint, on an equal footing with human medicine, at a time when schools within that state were not equipped to meet the high standards demanded by legislative enactment. This advance has stimulated other states in the Union to an increased effort, and the federal government, through its Bureau of Animal Industry, indicates those institutions whose curricula are such that they may be expected to develop men suitable for service in the special work of the Bureau. Canada is forging ahead, and the examination required for entry into the Health of Animals Meat Inspection Service, is a step in the right direction, but the progress is slow and the

schools are not provided with sufficient funds to meet the demands of present-day educational requirements.

As a profession, and I believe that trained veterinarians are professional men of the highest order, a greater amount of time is demanded in the study of its many branches than is required for proficiency in any other line of endeavor. That there has been a tendency on the part of some of those financially interested in the exploitation of veterinary education to consider it as a trade rather than a profession, we are, perforce, compelled to admit. This tendency, however, has practically disappeared and the institutions now engaged in educating veterinarians are strengthening all phases of their curricula. As to the exact requirements and special training which may be insisted upon, there is naturally some difference of opinion. Each teacher considers his subject the fundamental one for the laying of a proper foundation; were it otherwise, the natural enthusiasm which should always exist would be wanting, and the details would be imparted in such a half-hearted manner that a student could scarcely eliminate the unimportant from the important features. If it were feasible, I would suggest that all desiring to perfect themselves as veterinarians should first take the prescribed curriculum in any of our leading agricultural colleges, after which they would be able to absorb the many intricate details in chemistry, physiology, anatomy, pathology and other subjects which vary with each species of animal that a trained veterinarian may at any time be called upon to treat. While such a scheme may be impracticable for immediate application, I am of the opinion that the greater portion of the agricultural college training connected with the feeding and breeding of live stock should be included in the curriculum. This with a training similar to that now given in human medicine at our leading universities, using the horse as a type instead of the human being, and supplementing such instruction by the inclusion of special features connected with the various species of animals, so as to ensure a complete familiarity with the most pronounced peculiarities of each, would materially assist in thoroughly grounding those electing to be-

come proficient in this art and science. After submitting to such an apprenticeship, the individual graduate would feel capable of successfully dealing with many disorders which now puzzle all but the most experienced. His powers of discernment and intuition would be so developed that the greatest barrier to success, that of proper diagnosis, would largely be removed through his being conversant with the idiosyncrasies common to each species of animal. In opposition to the above outline it may be argued that these requirements are being fulfilled to-day, but if this is so there are few schools which are meeting them in their broadest conception, and the highest practical development possible will not elevate in an excessive degree one who must be as versatile in his proficiency as the veterinarian should be.

Many are unaware that a veterinarian may, in an ordinary day's routine, be called upon to treat,—a hog, whose anatomical and physiological functions are very similar to those of man; a cow, with a very complicated digestive apparatus, requiring four stomachs and the usual complemental intestinal arrangements for the full performance of its functions; a horse, with yet another type of digestive system; a dog, whose digestive organs will readily assimilate bones and the innumerable ptomaines found in decaying meat; yet this is but a small list, for one might go on indefinitely detailing innumerable animals, including birds, which may be maintained as commercial assets, fancy stock or household pets. It may be pertinent to remark that the newly created fox industry, or the commercialization of foxes for their fur, is presenting problems of more than ordinary concern, if the final result of the experiment is to be a success from the financial standpoint. The turkey industry on this continent has been seriously menaced with extinction for the past twenty years by an infectious disease, and science has offered little to relieve the ravages thus occasioned. Fully trained men are required to deal with these and many other problems equally important. These references are extraordinary, but indicate certain ramifications of the science which must be provided for in the education of the modern veterinarian.

In view of the versatility demanded of the trained veterinarian, is it reasonable to expect that an ordinary mortal can in three or four years assimilate even sufficient basic knowledge for dealing with all or even a portion of these animals, when it requires five years in our best universities to perfect one's self in the art of ministering to the ills associated with the human species? Again, not only are we confronted with the variations which I have very superficially enumerated without specific detail, but we have variations in the action of drugs, a different series of contagious diseases, some of which may be intercommunicable among all or a few species, and last but not least, as a diagnostician, the trained veterinarian must determine the location of a disorder, not by interrogating the patient as is the case in human medicine, but by properly directed observation and elimination.

It was Hierocles,* who, at the latter end of the fourth or the beginning of the fifth century, indicated the difficulty of diagnosis in the following words: "In men there is an inborn faculty of speech by which they can express what is troubling them, nevertheless those skilled in the healing art consider the observation of symptoms necessary. How much more needful, then, must it be in veterinary practice to observe these symptoms of disease recognized as such by our traditional art in animals which are dumb by nature." In fact, there is practically no guide save the knowledge which is secured by the closest application, assisted by intuition, and accompanied by a natural aptitude for the work in hand.

From an environmental standpoint we are a meat-eating nation. We are not producing all that we consume in meat, meat food and animal products, yet we have one of the largest areas of fertile lands on the globe. The total value of live stock in

* *Ibid.* Hierocles is by some considered a lawyer, but his writings show that he was conversant, with a more than ordinary intimacy, with the veterinary art as it existed in his day, and in a manner which could be secured only by actual contact and practice with animals. Two books written by him were five hundred years later the basis of a work which was intended to perpetuate for all time the practice of the Byzantine veterinarians. The wording of the final sentence quoted indicates that the art of veterinary medicine had then been known for a long time.

Canada approximates seven hundred millions of dollars.† Basing the yearly loss at five per cent., which is a very conservative estimate, due to preventible causes, there is an economic loss to the country of thirty-seven million dollars per year. The cost to the country of the Health of Animals Service, whose duty it is to protect the animals of Canada from the spread of contagious diseases within its borders and the prevention of their entry from without, is but three hundred and twenty-five thousand dollars or considerably less than one per cent.

With this vast investment, it is apparent that the time is ripe for properly safeguarding this great live stock industry which is one of the principal assets of our country. Probably the best means of safeguarding this great interest is to see that adequate provision is made for the suitable training of such material as may present itself at the existing veterinary colleges. This raw material must first be equipped with the basic education necessary for the proper assimilation of such facts as may be presented in the purely technical studies required. Without such a foundation, the superstructure cannot be raised with a reasonable assurance that the individual will be capable of coping with the many problems presented to him after he has graduated.

Sufficient schools of a proper standard are not now available in Canada, therefore, we may ask, are our universities unequal to the task which is at their door? Other departments are being generously endowed and equipped, yet one of the most important phases of higher education is being silently ignored or overlooked.

$5,000 FOR A CLYDESDALE COLT.—Fairholme Farms of New Jersey, the property of R. A. Fairbairn, announce the transfer to F. Lothrop Ames, of Massachusetts, of the ten-months-old Clydesdale colt, Fairholme Footprint. The price was $5,000, a record for a colt of that age. Fairholme Footprint is one of the most sensationally bred colts of the breed. * * * —(*Breeder's Gazette.*)

† The Superintendent of Compilation of the 1911 Census, Mr. E. S. Macphail, has supplied figures from which the following values have been estimated: Horses, $426,003,930; milch cows, $123,362,225; other cattle, $76,228,020; sheep, $14,510,400; swine. $24,914,714. The total figures for poultry are not available but are estimated at $15,000,000. British Columbia figures are not available and are estimated at $61,591,761. The total from these figures is $742,511,050.

FUNDAMENTALS OF GOOD LIVE STOCK SANITARY CONTROL WORK.*

By M. H. Reynolds, University of Minnesota and State Live Stock Sanitary Board.

The reasons for the existence of live stock sanitary control work are not many. I can think of but two. There is, first, the protection of human health against infectious diseases of lower animals; and there is one other reason, the protection of live stock from preventible disease and consequent losses.

Social and economical reasons for protecting human health are plain enough. Protection of live stock from infectious disease means the protection of our whole social structure, because a prosperous agriculture is absolutely essential to human well-being and in our country animal husbandry is absolutely essential to a prosperous agriculture.

No one can ever give us any reliable figures for value to the United States of the live stock sanitary control work which has twice eradicated foot and mouth disease. What financial statement can we ever have that will adequately express value to the South and through the South to the whole country, of original research work and subsequent control work which opened a way of eradication for Texas Fever, and which is now actually progressing at the rate of from 25,000 to 40,000 square miles a year. The eradication of pleuro-pneumonia from this country can never be valued in dollars and cents.

In this day no one can reasonably question a great need as justification for the existence of a well organized, well supported, and all around efficient state live stock sanitary control work.

Present Situation.

Every honest veterinarian who has studied the sanitary control situation in many states knows that with a few exceptions

* Extracts prepared by the author from the original address before the Nebraska Live Stock Breeders' Association, Lincoln, January 21, 1914.

the situation is far from satisfactory. Only a few states have live stock sanitary control organizations that are capable of doing efficient work and these few states are widely scattered. Political machines that depend upon political favors and the avoidance of influential antagonisms rather than upon efficient service are only too common. Politics and sanitation, either human or veterinary, have never been and never can be mixed with results other than harmful.

The veterinary sanitarian, like the health officer, should be a trained specialist with permanent tenure of office if efficient.

State live stock sanitary control work is a job by itself. It is all nonsense; it is foolish to suppose that any veterinarian without special experience or training can step from busy private practice to state control work and give efficient service. It is folly to take a man from spavins and colics and pneumonia, make him state veterinarian by political appointment, and expect him to deal intelligently with general problems of state control work until after a very considerable amount of actual work and experience.

The probability of a man so appointed holding his position longer than one term depends, as a rule, not on his ability and efficiency as a sanitarian, but upon political skill and tact and upon ability to make a good bluff at doing something and at the same time be able to avoid antagonizing stock owners who may have political influence.

Efficiency in sanitary service is apt to make the executive officer unpopular. Efficiency and popularity frequently vary in inverse ratios.

It has been a matter of repeated experience in various parts of the United States that whenever a capable veterinarian was appointed to state veterinarianship under the old plan and then proceeded in good faith to undertake any large progressive work, he has been displaced about the time when his work began to look promising. Even if his successor had the necessary character and ability, he, of course, faced a new job which must be learned before his services would be of much value to the state.

Unfortunately students in our veterinary colleges receive but little useful training in sanitary control work and too many of them go into practice in country districts with very hazy ideas of how they are going to advise owners in case of an outbreak of a given infectious or parasitic disease.

The lack of original training makes it difficult to find veterinarians competent to take charge of state control work. The best that a state can do under present conditions is to select a broad-gauged veterinarian who is recognized as able and reliable and who has perhaps made good in private practice; put him in charge of state work and wait for him to learn the new job. If he undertakes any efficient work with the big new problems confronting him he soon realizes that it is decidedly a new job, and that the problems are very different from those which he met in private practice.

Suggestions for Something Better.

Any really successful live stock sanitary control work must have stability; must have freedom from political entanglements; must have adequate funds; must have public confidence and support in an unusual degree; there must be no possible suspicion of graft; and there must be in it a mutual co-operation of veterinary interest, and live stock interest. All experience in state work shows that efficient and valuable work is only possible where there is stability. Constantly shifting policies, a constant succession of new men learning the same job puts up an absolute bar against satisfactory progress in state control work. There must be defined policies, long time plans, permanence, public confidence, and legislative support, as fundamental necessities.

The only plan now in sight which, in my judgment, comes near answering to these requirements is that of a small non-political commission or board of about five members—stockmen and veterinarians. This board employs a trained veterinarian as executive officer; as well as the field veterinarians and other help, fixing the terms of office and compensations. By this plan it is possible to retain an efficient man in spite of political antag-

onism or to get rid of an inefficient man, no difference how much political support he may have. The board meets at infrequent intervals, say quarterly, and serves to decide upon general methods of utilizing funds; adopts general sanitary policies, and all rules and regulations. Board members do no field work; they must leave the detail executive work and the field work entirely to the man employed for this purpose, who operates always in the name of the board and according to general plans and policies previously approved by the Board. But one membership should become vacant each year, so that there is no opportunity under ordinary conditions for sudden changes in membership and reversals of policies.

The state board as thus far described, constitutes only a small central machine. With this there must be intimately associated under carefully worded provision of law, all local boards of health and health officers. It should be made the duty of local boards of health and health officers to co-operate with the live stock sanitary board. The board will thus have agents in every township, village, town and city of the state, for whom the law specifies certain duties and who can be called upon by the state any time for information or active assistance.

The first lesson our people must learn is that public sanitation can never be made to mix well with politics—in other words, public sanitation should be "out of politics" just as far as possible. The second lesson in this connection is that veterinary sanitary control work is a job by itself. An ordinary private practice, no difference how big or successful, does not fit a man for state control work even though he have natural ability. Vegetable gardening on a big scale does not fit a man for managing a western wheat ranch; practical work as a cabinet maker does not fit a man for work as a building contractor. In each case there are two different jobs in the same general field, each requiring special training.

The executive officer of such a board must, of course, have back bone and at the same time plenty of tact. He should be big enough to be worth a good salary and then he should be properly paid so as to hold his high grade of service for the state.

Board members receive no compensation aside from actual traveling expense to the board meetings. They have no pecuniary interest at stake in holding or losing board membership—are therefore in a position to stand firmly for policies that seem wise, and are able to go before finance committees with unquestionably clean hands.

If the board is to consist of five members, then three of these should be stockmen and two should be graduate veterinarians. The executive officer, always an employee, not a member, should be a veterinarian and the men doing actual field work must be veterinarians, of course.

Theoretically, stockmen memberships in majority would oppose progressive work with diseases like tuberculosis and glanders. As a matter of practical experience where this general plan has been tried, they never have stood in the way but have worked in perfect harmony with the veterinary members of the board. The general conditions of public interest and intelligence on this question is such now that stockmen board members never can stand long in the way of progressive work along these lines.

That this general plan of a small non-partisan board of stockmen and veterinarians has been working out most successfully in actual trial, was accepted by the United States Live Stock Sanitary Association at its Chicago meeting in 1910. There have been a few rare exceptions where a state veterinarian with great ability, unusual tact and a winning personality, has been the whole thing. These few men holding political appointments as state veterinarians have done good work. They started things; they did things. But in such cases it has been shown by subsequent developments that the successful state work all hinged on the one man's health and continuance in service—not upon the organization. When this one man has died or retired, the state work has usually taken a slump. The bottom fell out. All experience in state control work indicates the necessity of stable organization that does not hinge upon the continuance in office or the personality of any one man.

There are difficulties in the way of this board plan, but there are greater compensating advantages.

Difficulties.

Antagonisms.—A retarding factor all too common in veterinary control work on whatever plan, has been antagonisms between state veterinary sanitary work and agricultural experiment station authorities. This difficulty has cropped up in so many states that there can be no question of its presence or its importance. The explanation of this is easy and the remedy is easy. The two fields over-lap. Two different state institutions receiving financial support from the same state legislature are trying to do the same work and easily become rivals for reputation and for support before the same public. There should be organic relation in the work. Certain lines of work may properly be done by either one and for this reason there must be mutual agreement with the general principle in view that the first and chief duty of sanitary authority is police control work—not research. In the absence of some organic relation there must be over-lapping, competition and antagonism, if both bodies are ambitious and active.

Future sanitary boards are going to need all the foundation and backing that can possibly be secured when they tackle the great problems of tuberculosis and hog cholera and glanders in earnest. So far, most state boards and state veterinarians have been only playing hide and seek with these problems of tremendous importance.

There must be harmony and co-operation in place of division and antagonism. This unity and co-operation must include more than the agricultural college and station. It must include live stock and other agricultural organizations.

If these two general propositions be true, then some at least, possibly a majority, of the board members should be there *ex-officio* to give harmony, stability and further freedom from political entanglement.

These ex-officio members should represent permanent and

influential organizations of stockmen and veterinarians. And the agricultural experiment station should be represented on the membership to secure harmony and unity of service in a common field, and to add in stability. I do not believe it best or desirable for an agricultural college to do the direct executive work except when political or other conditions make such arrangement imperative.

A sanitary board thus closely organized with such institutions as the state live stock breeders association, or agricultural college, or state dairyman's association, or state veterinary association would necessarily have greater stability, a more general public confidence, and immensely greater influence, than members selected at random by a governor or frequently by his private secretary, who may know little of live stock sanitary work or its needs.

Finding Executive Officer.—It is difficult to find a good executive officer for such a board. The only way we have at present of getting a good executive officer is to select the most promising veterinarian we can find in private practice; take him into state work, and train him for a new job. He must, of course, have energy, be capable of learning office methods; must be firm but tactful; must have brains and capacity for appreciating big problems and for dealing with general issues. It takes time to train such men for their work, but on the other hand if successful, he may be continued in office as long as the Board is satisfied with his work. Sudden changes in the political complexion of the state do not in the least affect his tenure of office or the probability of his being able to continue work under way.

Hybrid plan.—A few states have a plan that is a sort of unproductive hybrid—a cross between the state veterinarian plan and the sanitary board plan as approved by the United States Live Stock Sanitary Association. These states have a small sanitary commission, but their secretary is appointed for them by the governor under the title of state veterinarian. Serious weaknesses in this plan are self-evident. The executive officer so appointed may be entirely out of harmony with the policies of the

board. His retention does not depend upon giving satisfactory service to the board but upon ability as a politician. There is necessarily instabilty and frequent changes where there should be stabilty and permanence.

The Future.

The possibilities for future work with bovine tuberculosis are simply fascinating.

We have a large amount of reliable information concerning the disease. We have a simple, accurate and rapid diagnosis for it. We have the advantage now of many years of agitation and public education. The easy possibility of simple and comparatively rapid eradication from pure bred herds has already been demonstrated in a practical way. Breeders here and there all over this country are advertising tuberculin-tested, guaranteed tuberculosis-free herds. We have a considerable number of definite propositions in control work settled for tuberculosis. The field is ripe. The prospects are immense.

Infectious abortion is just beginning to be appreciated at its enormous importance. We already have two accurate means for diagnosis. We have an encouraging possibility in front of us for its seriousness and ready to co-operate. Breeders and even veterinarians did not concede its true importance. This field is already ripe now for the biggest and best work that any state live stock sanitary board can be made capable of doing.

Can there be any question but that the appropriations usually provided by states for veterinary sanitary control work have been inadequate and unwisely inadequate? Can there be reasonable doubt that money intelligently used by an efficient sanitary machine is capable of bringing to the state an interest yearly earned by other public investments.

Consider for a moment the entire livestock values of your state and their social significance. What in proportion would an annual appropriation of $50,000 a year be for your sanitary control work?

An agricultural state can ill afford not to spend money gener-

ously to protect her live stock interests. Our appropriation is but a trifle in proportion to the interests which we are protecting with it.

In order to secure large and increasing appropriations continued through any number of years, it is absolutely necessary that the livestock sanitary authorities must do efficient and conscientious work. Funds must be handled with the most scrupulous honesty and managed so as to bring the best possible returns for the state making the investment. It is necessary for such authority to have the confidence and backing of livestock interests and veterinarians of the state. And it must be clear that large appropriations and important legislation are not for the board—clear that the board is merely an agent responsible for wise handling, and clear that funds and the benefit of what may seem strong legislation merely pass through the board to the livestock owner and a general public that is dependent on prosperous animal husbandry.

He Drives a Shetland.—Big six cars may be all right for those who like them, but so far as President Vincent, of the University of Minnesota, is concerned a Shetland pony has more sense and is better company, according to the Minneapolis *Tribune*. That is why it is not unusual to see a little Shetland hitched to a go-cart standing in front of the administration building on the campus, while powerful automobiles sulk in front of it and behind it—the pony waiting for Dr. Vincent and the automobiles for regents or deans or just plain professors.

"Pinto" is the Shetland's name and he belongs to the youngest of the Vincent family. He is said to be extraordinarily intelligent, and to be able to detect sugar in an approaching pocket with a certainty that would do credit to a doctor of chemistry. Dr. Vincent has not yet ventured on the downtown streets behind the Shetland, but he drives behind him between his home and the university without any loss of his own dignity and considerably to the augmenting of that of the Shetland.—(*Our Dumb Animals.*)

Dr. C. M. McFarland Has Removed from St. Joseph, Mo., to Spokane, Washington.

ANTISEPTICS VERSUS GERMICIDES.*

By Robert T. Morris, M.D., New York, Professor of Surgery, New York Postgraduate Medical School and Hospital.

When we are giving information to royalty, it is customary to preface our remarks with the statement "as Your Majesty already knows," even though we are discussing so distant a question as that of partridges in America. When presenting notes on the subject of antiseptics versus germicides this evening to an audience of surgeons, I am stating only what your majesties already know, but commonly forget.

Protoplasm is the basic unit of organic life. Bacteria and the body cells of higher organisms both consist of protoplasm. Things which commonly injure the one commonly injure the other. Bacteria are simple morphologically, but complex chemically. The higher organisms consist of aggregations of single cells, each one of which is simple like the bacterium morphologically, but complex in its chemical relationships. In the course of evolution bacterium and body cell have come to be peers as a result of the struggle for existence.

Under ordinary conditions a very good balance of nature is maintained between bacterium and body cell. When the higher organism receives a wound, this balance is temporarily upset and the surgeon is called to the aid of the higher organism. He chooses one of several resources: 1. A germicide which is destructive to bacterium and to body cell equally, 2, an antiseptic which merely inhibits the development of bacteria, but is not injurious to their protoplasm or to that of body cells, or 3, saline solution with a salt content which makes it isotonic with the blood serum of man, or Ringer's solution containing various salts which are isotonic with human blood serum.

The time for employment of germicides is chiefly in that brief

* Read before New York Academy of Medicine (Surgical Section), December 5, 1913. Reprinted from *N. Y. Med. Journal*, January 10, 1914.

interval between the receipt of a wound, and organization of effort on the part of body cells for purposes of defense. Germicides may also be employed for preparing the skin of the patient and the hands of the surgeon. As soon as the body cells of the patient have recovered from the shock of a wound, and have organized their defense, germicides may be equally injurious to bacterium and to body cells, with a certain advantage to be sure in favor of the patient, because there is the *vis a tergo* of his aggregation of body cells which continues to deliver energy to the body cells in the vicinity of the wound, and to their agents the phagocytes. The bacterium has to work alone, singlehanded.

In the course of an aseptic operation, when bacteria are mostly kept out of a wound, and likewise in open wounds in which the body cells have organized their defense, germicides may be extremely injurious. The surgeon is to depend instead upon antiseptics which are not germicides, or upon saline solution or Ringer's solution for mechanical cleansing purposes.

We first noted the harmful influence of germicides in abdominal surgery because the peritoneum so forcibly resents injury in the pretty protoplasm of its dainty endothelium. The surgeon has not been so alert in perceiving the kind of harm which follows carelessness in choice between antiseptics and germicides which are to be employed in external open wound treatment. Bichloride of mercury, carbolic acid, hydrogen peroxide and iodine are all germicides. They injure the protoplasm of the cells called bacteria, and protoplasm of our body cells. They are extremely useful in a small part of the surgeon's work when wisely employed. When employed in every day service by surgeons and by the laity as household remedies they may be extremely harmful.

The beef trust taught us a lesson. When dressed beef was immersed in very weak solutions of benzoate of soda, boric acid, or salicylic acid, it was found that saprophytes postponed their activities, even though the cells of the beef had lost their power of vital resistance. These simple antiseptics, which are nearly inert as germicides, will do for wounds what they do for beef.

In the presence of the body cells of a living organism they inhibit the development of bacteria until such time as the body cells have organized their defense. Paraffin oil, we have lately come to learn, may be grouped among the antiseptics which are not germicides. It does not destroy bacteria nor injure body cells, but bacteria will not grow well in its presence.

Under certain circumstances it is desirable for us to employ antiseptics which are not germicides, but which have the peculiar effect of stimulating the development of repair cells. In this class we find the anilin which in its purified form is known as scarlet red, and dioxychinolin sulphate, freed from its potassium admixture. Scarlet red may overstimulate, and must be employed with skill. Purified dioxychinolin sulphate [Dr. Morris was speaking of Chinosol as we have learned on inquiry. He gave the chemical name in addition, but the latter was the only one quoted when the manuscript was edited.], when used as we formerly used bichloride of mercury, in the same strength of solution, has a greater antiseptic power than the latter (according to the report of the Council of Pharmacy of the American Medical Association) and yet is a feeble germicide. Both these substances belong to the group chosen by the surgeon who wishes to employ an antiseptic which is not a germicide, and which at the same time has special function in stimulating the development of repair cells.

In the course of development of the principles of the third or pathological era of surgery, we were all so deeply imbued with the idea of assuring chemical destruction of bacteria and their products, that we overlooked the influence which germicides exerted in destruction of body cells and their agents at the same time. This influence had to be met by unduly prolonged effort on the part of the reserve energy belonging to the aggregation of cells constituting a higher organism. We ran afoul of Newton's third law. The germicides which became popular during the pathological era of surgery have now passed into household use, and on the whole may perhaps be said to do more harm than good. The repair of a wound is long delayed by continued employment

of such germicides as bichloride of mercury, peroxide of hydrogen and carbolic acid.

According to the principles of the fourth or physiological era of surgery, which is just now emerging, the idea is to turn the patient over to himself, to give him home rule in the simplest way possible and to aid him in meeting his hereditary enemy—the bacterium—with his own defense organs—the body cells—without making the task more difficult by employing germicide bomb shells which throw fragments into the ranks of enemy and friend alike.

The Report of the Veterinary Director General of Canada, Dr. F. Torrance, under authority of the Canadian Department of Agriculture, has recently been received, and, as might be surmised, is a very complete statistical report of animal diseases existent in Canada.

Dr. Harry Evenson Home on Leave of Absence: Dr. Harry Evenson, Wahpeton, North Dakota, who is in the federal service in the Philippine Islands, is home on a visit to his native state. We congratulate the doctor, and trust that every minute of his visit will be a pleasant one.

Horse Breeding in Montana is the title of a report published as Bulletin No. 4 by the State of Montana Stallion Registration Board. The data for this report was compiled by Dr. E. H. Riley and Miss M. Kleven, and is a very interesting and instructive little book of more than 60 pages, illustrated.

New York State Veterinary Medical Society Will Hold Its Twenty-fifth Anniversary at Rochester, August 11, 12 and 13, 1914. This will be a jubilee meeting in commemoration of the organization of the society in that city a quarter of a century ago. In addition to the reading and discussion of papers, and the excellent clinics, both surgical and diagnostic (for which the New York State society is noted), an historical sketch of the organization and development of the society will be presented by a committee appointed by the president to prepare same.

SCISSORS AND TISSUE SEPARATION vs. THE KNIFE.

By John Lynn Leonard, D.V.M., Astoria, New York.

Most of us have a hobby, as it is called, on some one thing or another in regard to our work; and sincerely believe that there is no other method equal to it.

My patrticular favorite happens to be the use of scissors in surgery in preference to the knife, and the separation of muscular fibres, whenever possible, instead of cutting them. Of course it is impossible to use the scissors in every case, but the numerous instances in which they may be used by one in the practice of handling them is amazing. Many of these are cases in which the average practitioner never even considers their value. A friend of mine who is a very prominent and successful human surgeon has used scissors as a general instrument ever since I have known him, and long before. No matter what the operation is, whether a serious laparotomy or merely a slight wound, the scissors are on hand and he never forgets to use them. While still a student I became interested in his methods and picked up a number of valuable points from him; the foremost of which, I consider his choice of instruments. At first I looked upon him as crank, but now I think I am just as much one.

The most prominent operations in which the use of scissors may play an important part, and in which the separation of muscular fibres may also be combined, are laparotomies of the various kinds. In these operations the patients should of course be fasted, purged and catheterized so that the abdomen may be empty and thus offer the least amount of resistance possible. After the anesthesia is complete and the field of operation is prepared in the usual manner the loose skin is seized with a pair of forceps and lifted slightly. Then, using scissors having one sharp pointed blade and the other slightly blunt, thrust the sharp pointed one through the skin and under it as far as the length of the intended

incision and make one clean cut. By this method there is not as much annoyance from cutaneous vessels owing to the pressure of the two blades upon them in opposite directions just before severing, especially if the cutting edges are slightly dull, which they really should be, for this work. The muscle now being exposed, the points of the two blades, closed together, are used to carefully separate the fibres from one another in their longitudinal direction down to the peritoneum and retractor forceps inserted to hold the two walls apart. Next force the blunt point of the scissors through the peritoneum at one end of the incision, then, making sure that no organs are in the way, insert the blade the length of the opening above, at the same time gently lifting the membrane as much as possible and make another clean cut, as through the skin at the beginning of the operation. The abdominal cavity is now open, and for whatever is to be done inside there is no better cutting instrument than a pair of scissors. The stomach, an intestine, or the bladder may be punctured and incised the same as the skin, and for excising a part they are far superior to the knife. For the latter work the curved scissors are the best and most convenient to handle.

I will now refer briefly to the two subjects separately.

For removing warts and tumors of the various kinds, especially those of the eyes or eyelids; amputation of the tail, toes and other small members; and for trimming ragged wounds the scissors are by far more preferable than the knife when one is in the habit of using them, and are much safer and more harmless to the patient in case of accident either on the part of the operator or that of the patient. In regard to the latter I consider them indispensable in laparotomy, as there is practically no danger of injury to an internal organ, which is so liable to occur with the knife.

Now as to separating the strands of muscular fibres in preference to cutting through them! When a mason builds a brick wall he mismatches his bricks that the wall may be strong and hold firmly together. It is the same with nature when she builds a muscle out of fibres. When the mason repairs a hole in the

wall he follows the same method as in building it; so does nature when she repairs an injured muscle. If the mason is compelled by some circumstance to place his bricks so that the ends come together in a straight line he has a hard time keeping them in place until the mortar hardens and even then there is a great weakness left. Exactly the same with nature. If her fibres are cut in a straight line and placed back together again in the same manner she is put to a severe test and finds it very difficult to hold the two smooth surfaces in place until she can cement them together so that they will hold. If, on the other hand, the fibres are carefully separated from one another in a longitudinal direction and then replaced in their original position so that they overlap each other she has very little trouble in binding them rapidly and safely together again. Furthermore, there is far less danger of hernia occurring after the operation, less danger of hemorrhage during it, and two muscles, one upon the other but running in different direction, may be penetrated in this manner by the aid of retractor forceps. To close the wound very little stitching is necessary, for, as stated above, nature is so assisted in her own method of healing that with the over-lapping and slightly swollen fibres firmly pressing against one another union readily takes place and very little mechanical aid is required.

As Mark Twain once remarked: "A man with a new idea is a crank until the idea succeeds." These ideas, however, are not new. They are old and have been in use by various human surgeons for years. Yet veterinarians, as a whole, seem to be very slow to adopt them, whether it be unwillingness to depart from former customs, unbelief, or neglect to try out that which appears new. But I am fully convinced that if one once becomes thoroughly acquainted with the above methods from a practical standpoint he will never depart from them.

NEW JERSEY STATE BOARD OF VETERINARY EXAMINERS will hold its next examination for license to practice veterinary medicine in the State of New Jersey, on Friday and Saturday, June 26th and 27th, at the State House, Trenton, commencing at 10 a. m.

REPORTS OF CASES.

PROLAPSUS OR EVERSION OF THE RECTUM IN A COLT.

By S. R. Howard, P.D.Q., Hillsboro, Ohio.

"In all science error precedes truth, and it is better it should go first than last." Walpole.

Subject was a fair conditioned long two-year old gelding, on thin and dry pasture, which co-exists with and often will cause prolapsus of rectum in horses and colts, and naturally I believed the pasture to be the cause of this case.

Rectum was everted to the size of a quart cup, greatly congested, slightly torn and bleeding, but seemed to cause no annoyance to the colt.

Rectum had been emptied manually.

The hair of dock was platted, and the eversion bathed for a considerable time with hot alum water, and at the same time subjecting it to pressure with hand cloth covered, thereby reducing and returning it, and which was then well greased.

Left large syringe with which owner agreed to inject the rectum with warm milky water several times per day. Should the part reappear (which it did occasionally) it was to be returned as had been done by myself. The colt was appropriately fed and allowed the liberty of a small pasture to keep up intestinal activity.

In about a week the prolapsus ceased reappearing and injections were discontinued.

The owner frequently reported that there never was a normal amount of feces in the rectum, and that when defecation occurred the pellets and the amount discharged were quite small and accompanied with unnatural straining. Owner had explored the rectum and was quite positive there was a very firm stricture in the bowel about the entrance to the pelvis.

I could not credit this last, but upon careful examination I found the stricture as he had described, having a foramen about the size of a silver dollar. No other change appeared to exist. This stricture undoubtedly had been caused by the repeated straining.

The first and second fingers could sweep around the inner sur-

face of the stricture which seemed to be about ¼-inch thick, and could be somewhat dilated, but was extremely firm. The owner was instructed how to gently dilate it twice per day, which I am sure he attempted, but with no permanent effect.

I finally incised the stricture in several directions with a concealed embryotomy knife.

This was a perfect success and needed no further attention. During the following year request was occasionally made for medicine, " for his kidneys don't act right."

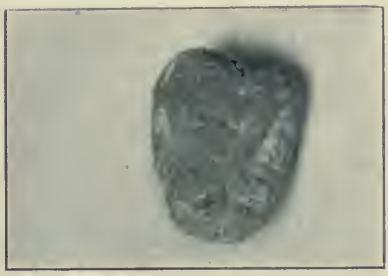
One cold rainy night I was called in great haste, " for that colt is going to die very soon if he is not helped." I found him sweating, standing with penis fully extended, grunting, straining violently, but no urine passing.

Manual examination discovered a hard body in urethra about 12 inches from meatus, and that the bladder was distended to its limit.

The storm was now at its worst and there was no time for an anesthetic or hunting for casting room.

We rushed a lot of implements off of the barn floor, improvised a casting rope, hurriedly threw and tied him, but not before warning the owner that the bladder might burst before we could relieve him.

The penis was withdrawn full length, a handkerchief tied around it, and by the dim uncertain light of a broken smoking lantern and the use of a sharp jack knife this stone was cut down upon and removed.



The bladder then emptied itself with a gush. Circumstances discouraged me from further exploration of the urethra.

On rising he strained out a little urine, shook himself, and began eating. No stitching or after treatment given. Was put to work in three days.

Occasionally within another year owner called for diuretic medicine, and finally presented the colt for another operation, the owner himself having discovered the presence of the larger calculus at the ischial arch.



The above stone was removed, no stitching, but antiseptic lotion was prescribed for occasional application.

In three days he was again put to work and has been at it uneventfully for a number of years. Looks well and is a splendid work horse.

About that time, on an adjoining farm, I operated on an aged gelding at ischial arch for urethral calculus, the only restraint being a twitch. No stitching, immediate relief and rapid recovery.

Now, during the first visit to the case, had I passed the catheter, the cause of all following trouble would have at once been found. I can find no reference to urethral calculi being indirect cause for eversion of rectum.

However, it cannot be out of place in some cases of eversion of rectum to suspicion the presence of urinary calculi. The value of an examination for them is self-evident to me, now, but at that time I was in the dark.

I trust this report will help in the diagnosis of such cases.

" An idea belongs to the one who best can use it."

LOWELL.

A CASE OF CONTAGIOUS BRONCHO-PNEUMONIA CAUSED BY BACILLUS COLI COMMUNIS.*

By Edwin M. Stanton, Detroit, Mich.

Hutyra and Marek[1] state that Enzootic Pneumonia of young animals is caused by the bacillus bipolaris septicus or its varieties. However, cases are on record where the disease has been due to an infection with the *baiillus pyogenes,* the *streptococcus pyogenes,* and by the bacteria of the colon group. It is further stated that in other enzootic diseases, as white scour and dysentery of sucklings, contagious broncho-penumonia occurs as a secondary infection. E. Wallis Hoare[2] says that broncho-pneumonia is caused by a variety of organisms; the bipolaris being the most common. He states that the *bacillus coli communis* produces broncho-pneumonia as a secondary infection of white scour, and in the chapter upon white scour[3] it is stated that the lung affection follows as a complication.

The statements of these two authors are exceedingly interesting. They show that it is possible for animals affected with a contagious intestinal disease to infect other animals with the organisms causing that intestinal disease, and that the latter animals may manifest entirely different symptom complex than that which existed in the animals primarily infected. The disease produced in the secondarily infected animals may involve a different anatomical system. In this way a secondary disease of a highly contagious nature is introduced into a herd. In other words, we have an organism such as *bacterium coli communis,* that is capable of producing in the animal economy two highly contagious diseases of a different nature.

During November of 1913, a section of lung was sent to this laboratory by the late Doctor Frederick H. Osgood, of Boston, Mass., with the request that a diagnosis be made. The history accompanying the specimen stated that the specimen was from a six months old calf, which had died, exhibiting symptoms before death of a disease which had affected 40 other calves upon the premises, resulting in the death of these animals.

The symptoms as stated were as follows: Elevation of temperature, discharge from the mucus membranes of the eyes and nostrils, loss of appetite, emaciation and respiratory disturbances, and death. It was stated that the disease occurred after the introduction into the herd of some thoroughbred Jerseys.

Gross Pathology.—The surface of the lung tissue was green-

* Research Laboratory, Parke, Davis & Co.

ish in color, roughened and covered with round and oval nodules about the size of a small pea. The nodules were soft, and when pressed a thick, creamy pus exuded. Upon cutting into the tissue the cut surface was of a dark red color. From the section of tissue, pus exuded. The tissue was heavier than water and non-crepitant.

Bacteriological examination.—Smears from the pus were made and when stained revealed a few streptococci and numerous short bacilli.

Agar plates were made from the pus in the usual way. One set was incubated aerobically, the other anaerobically. After 24 hours incubation both series of plates contained many colonies of bacilli. No colonies of streptococci nor staphylococci were observed on either set of plates.

Subcultures were made upon plain agar slants and incubated 18 hours. Microscopical examination showed that the cultures consisted of a short bacillus. The organism was then transferred to differential media consisting of agar slant, plain agar deep, glucose agar deep, plain bouillon, plain and litmus milk, gelatin, potato and fermentation tubes of glucose, lactose and saccharose.

Description of Organism.—*Morphological characteristics.*—A short, plump motile rod, which is gram negative, and does not form spores.

Cultural characteristics.—Plain agar, a translucent, raised, moist growth with wavy margins.

Deep Agar.—Translucent, confluent colonies along line of stab, and on the surface above the entrance of stab the growth raised and slightly grayish. A few gas bubbles observed in the body of the medium.

Glucose Agar Deep.—The growth the same as in agar deep. Medium, broken by gas formation.

Plain Bouillon.—Cloudy, viscid sediment formed at the bottom. A fecal odor was noticeable.

Plain Milk.—Coagulated, not digested. *Litmus Milk.*—Acid, coagulated. *Gelatin.*—Not liquified. Confluent colonies along line of puncture.

Potato.—Grayish white, glistening growth. *Glucose Bouillon.*—5cm. of gas, acid. *Lactose Bouillon.*—1 cm. of gas, acid. *Saccharose Bouillon.*—.3 cm. of gas, faintly acid. *Durham's Peptone Solution.*—Indol formed.

From the cultural and morphological characters, the organism was identified as *bacillus coli communis.*

From the pathological condition of the section of lung sent

in, it was evident that a pneumonic condition existed. The symptoms stated pointed to a broncho-pneumonia, and from the bacteriological findings it appeared that the *bacillus coli communis* was the causative agent.

REFERENCES.

1. Hutyra and Marek: "Pathology and Therapeutics of the Diseases of Domestic Animals." Vol. II., pages 134-135.
2. E. Wallis Hoare: "A System of Veterinary Medicine." Vol. I., page 496.
3. Ibid., page 504.

DOG SWALLOWS TWENTY-TWO TACKS—RECOVERS.

By Robert W. Ellis, New York, N. Y.

The subject, a young Boston terrier, with an inclination to tear up things when left alone, in the absence of his owners one evening busied himself in tearing up the hall runner, removing and swallowing the tacks. On returning home and discovering what had happened, his mistress immediately counted the holes in the runner, which numbered 22 more than the tacks found, and on looking into the pup's mouth one of the tacks was seen well back towards the throat, which was removed before he could swallow it, and a message sent over the wire to me for assistance. The first step in the treatment was an emetic hypodermically, which resulted in the recovery of a couple of tacks. After the effect of the emetic had fully subsided, a half ounce of castor oil was administered and was retained. This was around midnight. On calling the next morning I learned that there had been no action from the oil and found the dog whining and stretching, and he refused to drink cream or partake of any food. Another half ounce of castor oil was administered; immediately after which the dog ate nearly two slices of bread fed to him by hand and drank a saucer of cream. The feeding of bread had been urged with the object of making material in the stomach to gather up the tacks so that they might be carried along with as much protection to the walls of the stomach and intestines as possible. They were large, heavy tacks, being ⅝ of an inch long and very sharp, and I feared a terrible laceration of the walls of the intestines in their passage. So urged the continued feeding of as much soft bread as the dog would take, and he ate a considerable amount, as all other food was withheld. The results were very gratifying. He stopped crying after giving the oil referred to, that was followed by his eating a slice and a half of bread and lapping a saucer of cream; and a couple of hours later

had a bowel movement, passing three tacks without pain. He later vomited and brought up a tack or two after I had concluded that all the tacks had passed on into his intestinal tract. Was given more oil and fed more bread with gravy over it to induce ingestion of as much of it as possible. Second morning, had a movement in which nine tacks were present, with no pain, and finally the whole complement of twenty-two tacks were passed with seemingly no inconvenience, no laceration or bleeding, and the dog no worse for the experience. We published the report of this case, not for its scientific value, but that it may comfort some brother who finds himself in the same position with some other pet dog, possessed, like our patient, of more ambition than good sense.

TETANUS.*

By F. M. Starr, D.V.S., Odessa, Mo.

A very lame horse was presented for treatment and examination revealed a nail puncture wound in which there was much pus. Pure eucamphol was injected into the wound and the opening plugged with cotton, this treatment being repeated daily.

In about twelve days the animal was driven to my hospital, the owner calling attention to a general stiffness. As the animal neared the hospital I made a diagnosis of tetanus, as the tail was elevated and there was a very stiff gait. Examination of the eyes at close range was all that was necessary to confirm the diagnosis.

Three thousand units of antitetanic serum, intravenously, were given immediately, about noon, and the foot was placed in a poultice as soon as the animal got home. The patient was put into a dark stall by himself, but he was so restless alone that his mate was placed in the stall with him. In the evening another three thousand units of serum were injected.

Next morning the horse was so nervous one could not touch him, and further hypodermic treatment was omitted. He was so discontented in the stall he had to be turned out into the barn lot, which was within two hundred feet of the railroad. The case looked hopeless, so I decided to treat the wound only and applied pure formaldehyde into the nail puncture and plugged with cotton. The formaldehyde caused a great amount of sloughing, and pus even broke through and discharged at the cornet, yet the horse got well in spite of the treatment and without permanent lameness. The case ran a course of about four weeks. Disposition did not seem to have any bearing on this case as he was the most nervous horse I ever had in my hands.

* Reprinted from Kansas City Veterinary College Quarterly (March, 1914).

CYCLOPIA OR SYNOPHTHALMIA.

By Chester L. Roadhouse, D.V.M., Berkeley, Cal.

Cyclopia or synophthalmia is a deficient separation of the ocular vesicles, due to stunting in the development of the anterior



of the three cerebral vesicles. The malformation in this case has taken a very severe form as the nostrils and a portion of the

upper jaw are entirely lacking. It will be noted that although the ears and head resemble a colt in appearance, the white markings are suggestive of the head being that of a calf. The following letter was received with the specimen which was sent to the Veterinary Division of the University of California by C. P. Tolman, M. D.

"Mr. Hansen, of Watsonville, California, who gave the *colt's* head to me stated that the colt was born alive about nine years ago. He stated that the colt was unable to stand but was floundering around the yard and after about two hours he decided to kill it. The remainder of the body was perfect to all outward appearances. He also tells me that the mare was foundered and that they had a cow on the place that used to try to hook the mare while she was in her early pregnancy, and he ascribes the similarity in markings to a calf as a birthmark."

CANCER IN A CHICKEN.

By G. H. Conn, D.V.M., Prairie Depot, Ohio.

A large, healthy looking cock was slaughtered and dressed for table use, but upon evisceration the liver was found to be several times its original size and of a mottled appearance. Under the microscope this proved to be a cancer of the soft variety, containing very little connective tissue and hence very friable; the cells contained a very small amount of cytoplasm and large nuclei with cell inclusions.

The only case of cancer in birds I have ever known of and have been unable to find reports of any such cases in the history of veterinary medicine.

A Good Example.—John D. Rockefeller, Jr., drives a pair of trotting-bred high steppers from his New York residence, in East 54th street, every morning and in all sorts of weather, to his office at No. 26 Broadway, a distance of five miles. If other men of large affairs would but follow the younger Mr. Rockefeller's lead, instead of riding to business in heated limousines, they would arrive there in a happier frame of mind and their nerves, doubtless, would more readily stand the strain which accompanies the busy life of money getting.—*Spirit of the West.*—Clipped from *The Horse Lover* for April, 1914.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. Liautard, M.D., V.M.

A Second Attack of Tetanus [*Ernest Morgan, M.R.C.V.S.*].—Without showing any wound to account for the entrance of the microbe, a black, well-bred hunter, aged nine years, after having been hunted three days before, had a marked attack of tetanus. Put in slings, he received for seven days a daily injection of *Tetalin*. At first he seemed to grow worse, but on the eighth day showed improvement and finally got well. He was hunted again and sold.

A year after, the horse had a festered corn which was treated by the blacksmith. The history goes that a few days after he again was taken with unmistakable symptoms of lockjaw. He was put in slings again and submitted to the same treatment. The seven first days remained in the same condition, and it was only a few days after that the jaws became relaxed, and that the horse could be left loose in his box, and finally recovered.—(*Vet. Rec.*)

Congenital Opacity of the Cornea [*J. B. Hare, M.R.C.V.S.*].—This peculiar case was observed in a litter of cocker spaniels, four in number, for which the writer was called. All pups were in good healthy condition. Two were blacks and two browns. One black had complete opacity of both eyes; in the other black it was only partial, in both eyes also; of the browns, one showed slight marginal opacity of both eyes, and the fourth puppy was free from disease. The father and mother had normal sight. A weak collyrium of nitrate of silver was prescribed without result. The black pup that had double opacity was destroyed. The other kept under observation. Sulphate of eserine had been suggested as a possible good treatment.—(*Vet. Journ.*)

Sarcoptic Mange of Dog to Man [*John Buscomb, M.R.C.V.S.*].—The case is published to make the possibility of transmission from dog to man more generally recognized.

Some Pomeranian puppies had distemper and were also scratching themselves very much. They did not do well first

with the distemper and the diagnosis of sarcoptic mange was confirmed and treated accordingly. The maid who took care of them and nursed them caught the mange and the neighbors to whom they were given afterwards became also mangy after a short time.—(*Vet. Journ.*)

True Hermaphroditism [*Prof. F. Hobday, F.R.C.V.S.*].—Nine-year-old fox is brought for treatment. He has acute cystitis. Attempts to pass catheter failed. The urine is withdrawn through the abdominal wall with trocar. Death takes place after twelve hours. Externally, there was a well-developed penis of male, but no visible testicles. There were twelve symmetrically arranged teats as well developed as in a female of that age. The fox raised his leg like a dog when passing urine, though sometimes squatted like a bitch.—(*Vet. Journ.*)

Fracture of Incisive Teeth in Horses [*Capt. J. R. Hodgkins, F.R.C.V.S., A.V.C.*].—Cavalry horse received a kick in the mouth from another horse. Result incomplete fracture of the upper central incisives close to the alveolar margin and exposure of the pulp. The teeth were driven back towards the roof of the mouth. Extraction was decided. Horse is anesthetized with chloroform, absorbent wool was placed across the bars, the jaws fixed by winding webbing round, the surgical area was cleaned, and the head propped up with usual straw-stuffed bag. The gum and mucous membrane was dissected as far as necessary, periosteum scraped and the anterior alveolar plate of the two teeth was cut off with chisel, exposing the entire length of the root of the teeth, which were then easily removed. The wound was trimmed, the edges smoothed and flushed out with permanganate of potash solution. The author gives credit for this simple operation to the work on *Animal Dentistry by Prof. L. A. Merillat*, which he had consulted.—(*Vet. Rec.*)

Differentiating Tubercle Bacilli from the More Common Acid-Fast Forms [*G. Gair, M.R.C.V.S.*].—To determine the presence of tubercle bacilli in milk and excreta from other acid-fast organisms, such as timothy grass bacillus, dung and butter bacillus, the writer proceeds as follows: "I make my films and smears in the usual way, care being taken to spread the material uniformly and thinly. They are then stained with hot carbol fuchsin, the films are then immersed in boiling water for 2 or 2½ minutes without being treated previously with any discolor-

ing agents. The slides with films of timothy grass, dung and butter bacillus thus treated are found to be decolorized, but the tubercle bacillus retains its stain even after 2½ minutes immersion. In some of the slides I met an occasional tubercle bacillus even after boiling three minutes. If a film treated in the same manner and boiled from 2 to 2½ minutes still shows stained bacilli, those may be safely put down as tubercle bacilli."—(*Vet. Rec.*)

Mitral Disease in the Horse [*E. Wallis Hoare, F.R.C.V.S.*]—Twenty-five-year-old hunter has been, up to lately, in apparent health, having only on few occasions œdematous condition of the sheath. Now he is emaciated, has capricious appetite, an œdematous swelling is between the fore limbs, has a slight œdema along the abdominal region, the sheath is swollen also. The pulse is difficult to count, is irregular and weak. Respiration accelerated. Occasional cough is present, visible mucous membranes pale. Auscultation shows marked irregularity of the cardiac impulse. At the apex the sounds of the heart cannot be clearly differentiated from each other, the action of the heart is tumultuous. Towards the base of the heart, loud grating bellows murmur, systolic in character, is detected, it conceals the first sound, the second sound is much louder than normal. No increase in the area of cardiac region. Distinct pulsation is clearly visible towards the base of the heart. Jugular pulse on both sides. No treatment is prescribed, the animal was destroyed. Post mortem revealed: Enlarged heart, left auricle much dilated, mitral valve thickened and hard, cauliflower growth between the insertion of the chorda tendineae, left ventricle hypertrophied.—(*Vet. News.*)

FRENCH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Interesting Case of Osteitis Sequelae of Distemper [*MM. Bordenave and Camban, Army Veter.*].—A mare, seven years old, pure Anglo-Arab breed, had distemper. She remained thin and delicate. She had a cutaneous manifestation, where she lost her hairs almost all over the whole body and recovered. For the following three years she had articular synovitis of the hocks which disappeared. She has had fistulous withers which remained more or less rebellious to treatment and finally she now

has all the manifestations of osteitis. There are exostosis at various points of the skeleton. Large on the inner face of the tibia, they are enormous on the right. The hock in that region measures 57 cm. round. On the opposite leg it measures 43. Both large metatarsal are deformed by the presence of exostoses. There is also a large one at the inferior extremity of the right fore-arm. The internal condyle of the right femur is large also, and there is one as large as a child's fist on the sternum at the girth seat. All those are painless. It is peculiar to notice that as these exostoses began to make their appearance, the condition of the withers improved, and radical, spontaneous recovery took place.

Chronic Pyometry [*Directeur Herbet*].—Ten-year-old cow, apparently in good health, has had for several years abdominal pains. She is a strong animal, does hard work, and her appetite has always been good. She shows, when examined, the symptoms of chronic peritonitis with fluid in the abdomen. She died, was examined, and the cause of her peritonitis was made out. There was nothing wrong in the digestive organs. The uterus was very large, weighing seven kilograms. It had on the inferior and median part of the body a large ecchymotic spot, with a circular ulceration about 10 cm. in diameter. The internal face of the uterus had no cotyledons; there was no communication with the vagina; there was no neck of the uterus, and the vagina formed a true cul-de-sac of very large dimensions. The histological study of the walls of the uterus showed the lesions of chronic suppurative metritis. As there was no communication between the uterus and the vagina, there was then pyometry.—(*Journ. de Zoot.*)

Chondroma of the Fingers [*Prof. Dr. V. Ball*].—The author says: "I have had occasion to observe a case of chondrosarcoma of the finger, with numerous visceral metastasis, in a ten-year-old dog. The small toe of the right hand seemed reduced to the first phalanx, which, at its free extremity, had a neoplasm, widening in its form, largely ulcerated on its surface, granular and inflamed. The tumor was hard, and on section, the surface has an aspect cartilaginous, viz.: the characters of a chondroma. The growth measured 4 cm. in length and 5 in width. The post mortem revealed besides the presence of metastatic centers in the lungs and kidneys also one in the pancreas. The histological examination revealed the true nature of chon-

drosarcoma that some authors consider as cartilaginous sarcoma. —(*Journ. de Zoot.*)

Generalized Porocephalosis in a Cynocephalus [MM. *Query and Brocq-Rousseau*].—At the post mortem of cynocephalus, larvae of a species of lingatulidae are often found and which belong to the gender paracephalus of Humboldt.

Generally a small number only is found disseminated in the peritoneum, free or imbedded in the omentum or mesentery. Very seldom they are found in the liver or in the lung. In the majority of cases the authors have observed that their number is restricted and seldom more than ten are seen in one subject.

In the case that is recorded and illustrated the peritoneal cavity had a peculiar granulous aspect specially on the surface of the intestine. The granulations were formed by porocephali. There were hundreds of them, lodged in the omentum and mesentery. Some of them were also free in the peritoneal cavity. The larvae were rolled upon themselves, a few only being half or entirely unrolled. In the spleen and the liver as well as on the diaphragm there were a few. The kidneys and heart had none.

The case is exceptionally rare.—(*Revue de Pathol. Comp.*)

Septic Gangrene in Cows [*Mr. Marquet*].—*First Observation:* Between seven and eight years old, a cow, in a good state of health, had for about a year on the posterior border of the left shoulder an oval tumor which was fluctuating. With the trocar a fluid, honey-like in consistency, is obtained; but a free incision is required to empty the growth. Between one and two litres of thick, white, yellowish liquid are removed. Small arteries that have been cut give an abundant hemorrhage, difficult to control. The wound is closed with sutures. The next day the growth is as large as before. The sutures removed show the cavity filled by thick exudates; there is no suppuration, and the edges of the wound are dry. No bad odor. Two days later gangrene is manifest. No suppuration, blackish edges of the wound, infected smell, crepitation round surface, general condition bad. Death. *Post mortem:* The general lesions of infection.

Second Observation: Cow has prolapsus uteri. It is reduced and to hold it in place two stitches in cross are put on the vulva. Through the expulsive efforts of the animal, one suture has torn one of the vulvar lips; otherwise the animal seems doing well. The next day the vulva is swollen, sore to the touch. The uterus contains fluid which is washed out with permanganate solution.

Dressing with tincture of iodine. The condition keeps on getting worse, and on the third day death takes place, with lesions similar to those of the first observation.—(*Rec. de Med. Vet.*)

Dry and Ascending Necrosis of the Septum Nasi and Turbinated Bones in a Horse [*J. N. Ries*].—Mare roars and has a puffy swelling round the nostrils and lower part of the face above the nasal spine.

The septum nasi is perforated by an ulceration running as high as the lower extremity of the turbinated bones, which are also invaded by the diseased process. The ulcer is bound by a yellowish line surrounded by a red border. This line represents the limit of cartilaginous slough, perfectly dry, and without separating edges, nor greenish coloration, as is usual in cases of necrosed cartilage. This ascending necrosis, destroying slowly, does not affect the animal which is otherwise in good condition. The lymph glands of the maxillary space are slightly swollen. Trepanation of the face over the nasal bone permits free irrigations which gave fair results, but in the presence of a long treatment the owner decides to have the horse slaughtered.—(*Rec. de Med. Vet.*)

Our Colleagues in the American Army is the title of an editorial in the April number of our esteemed contemporary, the *Veterinary Journal*. Our English neighbors in the profession express astonishment that "a great civilized country like the United States has for so long persistently refused to grant what even the turbulent Balkan States consider a necessity," and suggest as one way to bring the United States to a realization of the value of the veterinarian, not only as doctor for the horses and mules, but in the capacity of inspector of animal food products, would be for "all the qualified veterinarians to hang together and all firmly boycott the Service." The editorial says in conclusion: "We, their British colleagues, can assure them, from our side of the water, that they have for a long time had our earnest sympathy, and that we wish them the greatest possible success." We can assure our British cousins that their good wishes are warmly appreciated by American veterinarians, and that we are very hopeful of success at present.

Dr. Kuhns Goes to Wilmington.—Dr. J. R. Kuhns, secretary of the Delaware State Live Stock Sanitary Board, has left Dover and located in Wilmington, that State.

BIBLIOGRAPHY.

VETERINARY HYGIENE.

(German.)

VETERINARY HYGIENE—OUTLINE OF THE CARE AND FEEDING OF DOMESTIC ANIMALS. By Dr. Martin Klimmer, Medical Councilor, Professor of Hygiene, Director of Hygienic Institute and Institute of Infectious Diseases of the Royal Veterinary College of Dresden. Second revised and enlarged edition with 207 illustrations. Berlin, P. Perry, 1914. Price 15 marks.

Klimmer's Hygiene is a recognized textbook, in which the more modern principles of feeds and feeding and the care of animals have been embodied. The scientific feeding based on Kellner's Comprehensive Studies on Animal Feeding was included in the first edition of Klimmer's Veterinary Hygiene, which he published in 1907.

In his second edition, Klimmer has revised his work and added two new chapters in order that it may comply with the practical requirements for veterinarians engaged in breeding and care of stock, also that army veterinarians may use it to advantage. The new chapters include the examination of feeds and descriptions of infectious diseases, which of course are only briefly described, since special publications deal more comprehensively with this phase of the subject. The author, in the chapter on infectious diseases, touches on the etiology and pathogenesis of these diseases and only mentions the treatment. On the other hand he discusses comprehensively the hygienic conditions which influence the resistance of the animals as well as the methods of disinfection. Another advantage of the second edition is the bibliographical data which appears at the end of each chapter.

The second edition is considerably enlarged. It contains 509 pages, divided into 10 chapters, and also contains an appendix. The first chapter deals with the air, the second with the soil, the third with the hygienic importance of water, in the fourth chapter the author discusses feeding, in the fifth he describes the injurious conditions which may be brought on by the feeding of substances containing poisonous plants and also food which has been adulterated or which contains impurities, or which as a result of various conditions has become spoiled. The sixth chapter contains the rules of general feeding, also the rations required by the different food animals according to Kellner's principles. The seventh chapter discusses the nursing of animals and other care and the

hygienic importance of pasturing. The ninth chapter contains a large amount of new material and stable hygiene; finally, the last chapter includes infectious diseases. The appendix of the book contains tables which furnish the raw and digestible organic material of the different food substances, also the starch values and the amount of ash. The 207 splendid illustrations enhance greatly the value of the book.

From this brief statement it may be seen that the author has included in his work all phases of animal hygiene. With this subject continually gaining in importance in the practice of veterinarians, the book of Klimmer will furnish the veterinarian highly valuable information, especially since the practitioner of to-day and of the future will not be called upon to treat diseases exclusively, but also to furnish data on questions pertaining to animal hygiene. ADOLPH EICHHORN.

VETERINARY ALUMNI OF NEW YORK UNIVERSITY.—In view of the fact that the New York State Veterinary College at New York University will have completed its eight months' course on May 25, the executive committee of the alumni association of that school, at its meeting on March 25, voted to hold the annual meeting of the alumni association on June 10, Commencement Day. The plan is, to hold the veterinary alumni meeting in the middle of the day (to be called about 11 a. m.) at the old veterinary college building, 141 West 54th street; so that on adjournment, the veterinary alumni may have an opportunity of joining the alumni of the other schools of New York University at University Heights in the afternoon to participate in the commencement exercises. The dinner of the veterinary alumni association will be held that evening.

This arrangement was made for the benefit of out-of-town men, who never get an opportunity to visit the beautiful campus and buildings of New York University and witness the imposing commencement exercises in connection with the graduation of the classes of its numerous schools. A communication from the secretary relative to this matter will reach each alumnus of the veterinary school, and we trust that as many as possibly can, will arrange to give themselves a day in the big city on June 10, and will visit the great university, of which their school is a part. Get the university spirit, it is inspiring!

CORRESPONDENCE.

PITTSBURG, PA., April 4, 1914.

Editor of AMERICAN VETERINARY REVIEW:

Dear Sir—I was much interested in Dr. Gilyard's report of the use of his method of treating a case of impaction of the caecum by the introduction of quantities of water through a trocar into the impacted mass. The results he obtained, I think, fully substantiate what I predicted in a recent communication. He obtained good results as far as he went, *but* he did not go far enough. I think that the further treatment which I indicated is very necessary to a complete recovery, as it is only by this means that the caecum can be made nearly empty, by which I mean that it shall contain largely a gaseous content, and not water free from solids. This condition is very necessary to recovery.

To examine the case reported, I think that the doctor was able to remove most of the solid content, at least all the solid material was gone as far as he could reach, but there is a grave doubt about the region at the apex being empty, as some sediment would settle at that point when the fluid was not being violently agitated. The caecum itself was still filled with fluid, as the doctor could find "no solid ingesta in the caecum," and this produced the old enemy I spoke of before—pressure, with the consequent inertia of the walls. Therefore he had progressed but not so far as to offer any chance for the circulation in the walls to re-establish itself, and for the muscular walls to regain their tone.

Some will think that the fluid in the caecum after the first operation would be absorbed by the walls, as is the physiological process in other parts of the bowels, but I do not think that this could take place; as the circulation is so greatly impeded and with the mucous walls in the condition that they are, no absorption could take place.

A question crosses my mind: What is the difference between cases of impaction of the ceacum in Eastern and central United States horses and those cases seen in horses in the Northwest? When horses in the Northwest recover from the trouble (60 per cent.), whereas the other horses *all* die, in both parts of which

country the same routine treatment is being used and has been used for years, there being nothing about the Western treatment that has not been known, used, and found hopeless by Eastern veterinarians, for years? I dunno?

Yours very truly,

A. C. WIGHT, D.V.M.

COLORADO SPRINGS, COLO., April 7, 1914.

Editor, AMERICAN VETERINARY REVIEW, *New York:*

Dear Sir—Regarding Dr. Wolf's inquiry for a deodorant, will say that for many years I have used mustard. Just plain, dry mustard. Take a small quantity in your hand, moisten to a paste and use it as you would use soap; and you will certainly get rid of such odors as Dr. Wolf describes.

I do not claim originality for this. I just learned it somewhere, and so long ago that I really do not know where or from whom.

Truly yours,

A. J. SAVAGE.

GARRISON, N. D., April 22, 1914.

Editor, AMERICAN VETERINARY REVIEW, *New York City:*

Dear Sir: On page 107, April issue of REVIEW, Dr. Chas. F. Wolf, of Pioneer, Ohio, asks for a deodorant for removing foul odors from the hands after coming into contact with decayed or putrified tissues.

I have found the following very effectual, especially after trephining of decayed frontal tissues or for teeth, where the most disagreeable odors cling to the hands: Wash the hands in a solution of permanganate of potash in water which will deodorize, and then to remove the resulting stain, rinse in a solution of oxalic acid in water.

I am not particular about the strength of these two solutions, as I have not experienced any irritating effects from either, and a last washing with soap and water will remove all traces of the oxalic acid, and should slight traces of the permanganate stains remain I think you would prefer it to the odor. Try the above and I believe you will get results.

Yours fraternally,

J. W. ROBINSON.

ARMY VETERINARY DEPARTMENT.

BRITISH VETERINARY OFFICER OF HIGHEST RANK TELLS EXPERIENCE OF BRITISH ARMY VETERINARY DEPARTMENT.

The Development, Organization, Methods and Work of the British Army Veterinary Service.

By Major General Robert Pringle, Director-General, British Army Veterinary Department, War Office, London, England.

Letter from General Pringle:

War Office, 23d March, 1914.

Dear Sir.—I m sending you a short article on the history of the Army Veterinary Corps in the English Army, which I hope will be of some service in helping you to obtain recognition of the veterinary service in the United States Army.

Yours sincerely,

(Signed) R. Pringle.

To Garrison Steele, Esq., M.D., D.V.M.

Veterinary surgeons were appointed to cavalry regiments in the British Army in the later part of the 18th Century. They were originally employed on the recommendation of a Committee of General Officers because of the enormous losses amongst army horses.

Their appointment was productive of much benefit to the service, in as much as glanders, of which military stables used to be hotbeds of the disease, was soon entirely eradicated, and the death rate within less than two years was reduced fifty per cent.

In those days the veterinary surgeon was a regimental officer. He was responsible to no one but the commanding officer for his duties. No other regiment and no other branch of the service had a call on his services in peace or war. Some spent the whole of their service at home, whilst others became prematurely old and infirm through living most of their lives in unhealthy climates abroad.

This was considered unsatisfactory, and in 1881 the veterinary service was organized into a special department, all regimental appointments, excepting those of the Household Cavalry,

being abolished. The officers were placed on a seniority list and a roster for foreign service under one central authority. A special uniform was adopted and they were attached to cavalry regiments, or units, for duty as their services were required.

The subordinate staff for carrying out the instructions of veterinary officers regarding the treatment of the sick belonged to regiments. These men were originally trained as cavalrymen, gunners or drivers, after which they spent two years or more in the forge learning to shoe horses. They were afterwards trained to look after sick animals.

This method of dealing with the sick was ample for peace requirements, but on service it was a complete failure, as the men trained in the above mentioned manner were required by units in the firing line for fighting, shoeing and attending to trivial ailments which would not preclude horses from doing their ordinary work.

The more serious cases requiring rest, extra food and daily veterinary attendance could only be treated in hospitals on the lines of communications, and our peace organization provided neither hospitals nor personnel.

This was the state of affairs at the oubreak of hostilities in South Africa in 1899, and to overcome these difficulties the Government had to apply to India for veterinary hospitals with trained native personnel under British veterinary officers, and also engage and train civilian subordinates during the war at high rates of pay.

The results were anything but satisfactory, and evoked severe comment from every direction. It was impossible for units to look after their sick horses on the march and they had to be sent to hastily improvised veterinary hospitals on the lines of communication. Many horses died which otherwise would have recovered. This would have saved the country the enormous expense incurred in replacing them with remounts. A recovered horse is far more valuable than an over-sea remount in that he is usually acclimatized to the country in which he is serving, and, further, he is a trained horse.

The chaos which resulted accentuated the fact that every branch of the army, no matter how small, must have a peace system of training, modelled on lines similar to those which will be in force in war. In 1902 a committee assembled to enquire into the conditions affecting the army veterinary service and to suggest remedies. The principal recommendations were the formation of an army veterinary corps of non-commissioned offi-

cers and men to assist veterinary officers in the discharge of their duties, and the grant of combatant rank and titles to the latter. This was granted by the royal warrant of 5th October, 1903, and soon afterwards veterinary hospitals were established in the large military stations in the United Kingdom and in South Africa. A section constituted a unit, its war establishment being fixed at 2 officers and 113 non-commissioned officers and men.

Veterinary officers are detailed for duty with the various units of the army, and to them is confided the veterinary supervision and care of animals. They make frequent inspections for contagious disease, and bring to the notice of commanding officers any measures necessary for the health and condition of the animals under their professional care. They superintend the dressing of simple cases by the regimental staff of units, sending the more serious ones to hospital for treatment.

With a view to forming a reserve of officers to come to the assistance of the army in time of war, two officers' training corps have recently been organized at the Royal Veterinary College, Dublin, and the Royal (Dick) Veterinary College, Edinburgh. Students are drilled and receive instruction on military organization and discipline, especial attention being paid to that which applies to the veterinary service. Selected candidates, after qualifying, receive commissions in the special reserve of officers and undergo a further course of instruction for three months at the Army Veterinary School and in a veterinary hospital. During this training they receive the pay and allowances of their rank, and receive in addition an annual retaining fee up to the age of 40.

The veterinary service of the territorial force, which hitherto has been on a regimental basis, is now being reorganized to resemble the veterinary service of the regular army.

Responsibility and efficiency go hand in hand, and it is realized in the United Kingdom that no branch of the Army can be of any great value in a critical situation unless it is given authority to take the initiative in duties which are strictly its own. The work of the officers of the army veterinary corps includes the veterinary supervision, the care and treatment of sick animals, the discipline and maintenance of combatants under their charge, and the replenishment of medicines, dressings and other stores. Such duties bring the officers of the army veterinary corps into close touch with the general work of the army. They are as much concerned as those of other units in the provision of food, clothing and other requirements to their men, in arranging their

camps and generally in exercising the same functions as officers of other units with the exception of actual combatant work. This system of training has evolved a class of officer in the veterinary service whose efforts has had a far reaching effect on horse economy and in the improvement in the health of the animals of the British army. GARRISON STEELE, M.D., D.V.M.

RECENT INVESTIGATIONS OF THE ETIOLOGY OF CONTAGIOUS PNEUMONIA OF HORSES, AND THE SALVARSAN TREATMENT OF THIS DISEASE.

Since the above article appeared in the AMERICAN VETERINARY REVIEW of February, 1914, Staff-Veterinarian Luhrs, of the German army, has published the following statement, giving further results obtained in the investigations of this disease:

EXPERIMENTS WITH THE COMPLEMENT-FIXATION METHOD OF CONTAGIOUS PNEUMONIA.

In these experiments an alcoholic extract from lungs of diseased horse was used as an antigen. With this extract complement-fixation bodies show in the serum of every affected horse which is still in the fever stage. The reaction becomes negative after the fever ceases.

A positive reaction could also be observed in some older horses, apparently well, but of which it could not be ascertained whether they had previously suffered from the disease. In newborn foals, and in horses which were known not to have been previously sick with the disease, a negative reaction was constant.

The serum of young horses sick with febrile strangles or septicaemia acted always negative. Two glanders sera did not react to the antigen of contagious pneumonia, neither did the contagious-pneumonia serum on glanders antigen.

Several experiments with extract from bronchial glands of cases of contagious pneumonia correspond with the above results.

The same result was obtained when, instead of the antigen of contagious pneumonia, a liver extract of lues was used as applied in the Wasserman method for human syphilis.

The fact is also noteworthy that human luetic serum produces a complement fixation with the extract of lungs of contagious pneumonia and of the bronchial glands.

In all these experiments, extending over several hundred sera, the necessary controls have been made.

It was not possible to secure a diagnosis of contagious pneumonia based on the Abderhalden dialysis test. Many such experiments were made, but the results obtained were extremely contradictory.

OLAF SCHWARZKOPF.

EXPERT EXAMINATION OF STALLIONS UNDER STATE LAWS.

The *Breeders Gazette,* in its issue of April 2, 1914, brings the following note as correspondence:

THE OHIO STALLION LAW.

In several articles in recent issues of *The Gazette* I have seen mention of the Ohio law for the examination of stallions. I have witnessed quite a number of such examinations recently by the *state expert.* If these were any criterion, the stallion law of Ohio is a farce, pure and simple. It is a well known fact, conceded by the veterinary profession generally, that thick wind and periodic ophthalmia (moon blindness) are hereditary and transmissible. The expert made no test of the wind, and gave only a glancing look at the eyes. The teeth were not looked at. The stallion was not examined to see if he was afflicted with vesicular or coital exanthema. Section 3 of the law says that "upon such examination a certificate shall be issued to the owner setting forth the transmissible defects." Could such a thing be possible with this kind of examination?

Darke Co., O. STALLION OWNER.

If this statement of the correspondent of the *Breeders Gazette* is correct, it is to be hoped that the "state expert," referred to in this note, was not a veterinarian. If so, he will by his apparent "mildness" of examination do a harm to the intent of the state stallion law, and contribute towards a prejudice against the veterinary profession; destroying in the very beginning the good prospects of a new kind of work that we are in a fair way of winning by our special study and training.

Those of us who have had experience in the examination of stallions and mares for breeding operations know full well that only a thorough examination is just to all, and leads to uniform results. Often it is not an easy task, complicated by the arguments of the owner of breeding stock. The young practitioner will have to add to the phrase of the horse dealer of "serviceably sound" the often heard phrase of the small breeder of "sound for breeding." Particularly the owner of brood mares is apt to regard the most glaring defects of conformation and soundness as "not hereditary, but only acquired," and he will cite textbooks on breeding as his authority, even if it is evident to a layman that the mare is not worth the service of a good stallion.

But here the complaint is reversed, and a stallion owner himself objects to the insufficiency of an examination. The case looks so strange to us that we feel justified in concluding that this examination was not performed by a veterinary "expert," who would certainly have better appreciated and understood the dicta of veterinary science and his responsibility.

OLAF SCHWARZKOPF.

ARTICLES FOR JUNE ISSUE—SOME ALREADY IN TYPE: *Comparative Medicine*, W. H. Dalrymple; *The Production of Artificial Immunity Against Tuberculosis in Animals*, S. H. Gilliland; *Maine Livestock Industry*, A. Joly; *The Tissue Food*, John A. McLaughlin; *The Intercellular Fluid and Its Relation to Health and Disease*, Thomas B. Kenny; *Six Experimental Cases of Tetanus in Carnivora*, L. S. N. Walsh; and several others.

TEXAS OR TICK FEVER is the subject of U. S. Department of Agriculture Farmers' Bulletin 569, by Dr. John R. Mohler, Chief of Pathological Division, Bureau of Animal Industry. This little bulletin of 24 pages, with illustrations, covers every phase of the tick question, and is a valuable medium for the distribution of knowledge to the cattle raisers on this important question.

THE CANADIAN STANDARD MAGAZINE for February, 1914, published at Calgary, Alberta, Canada, was recently received at the REVIEW office, and contains a striking picture of our esteemed collaborator, John Gunion Rutherford, published in connection with a very interesting sketch of Dr. Rutherford's life and activities in Canada, under the head of "Notable Canadians." Most of us feel that we know of all the greatness of this great veterinarian, but the *Standard's* account of his life, politically and in the interests of agriculture in Canada, show him to be even a bigger man than we had conceived him.

REVIEW LIKE OLD STOCK PRESCRIPTION: Dr. H. N. Eames, who has left Livermore Falls, Maine, to open a hospital in Sanford, that state, says in notifying us of his change of address, "I must have the REVIEW; it is like the old stock prescriptions."

SOCIETY MEETINGS.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the above association was held in Hartford, at Hotel Garde, Tuesday, February 3, 1914. Meeting was called to order at 11.30 a. m. by President Whitney. After reading of minutes of the previous meeting, reports of the secretary and treasurer were read and approved. Two applications for membership were presented and referred to the board of censors.

Officers elected: President, Dr. Geo. T. Crowley; 1st vice-president, Dr. V. M. Knapp; 2d vice-president, Dr. A. T. Gilyard; secretary, Dr. B. K. Dow; treasurer, Dr. Thos. Bland; board of censors, Dr. G. W. Loveland, Dr. Geo. L. Cheney, Dr. H. Whitney, Dr. G. E. Corwin, Jr., and Dr. P. T. Keeley.

Adjourned for lunch at 12.30 and reconvened at 2.30. Under the head of new business, the matter of illegal practice in the state was brought up for discussion, resulting in an action instructing the president to appoint five members, at a future date, to act as a prosecuting committee, and that money be appropriated out of the treasury to defray the necessary expenses of the committee. Later the president appointed Drs. G. W. Loveland, H. E. Bates, J. E. Underhill, H. Whitney and G. V. Towne as members of that committee.

Arrangements were made for holding the semi-annual meeting in Waterbury the first Tuesday in August next. The day will be devoted to surgical clinics, and the banquet and business meeting will be held in the evening.

President Crowley announced that papers for the meeting had been promised by Drs. Gilyard, Loveland and Cheney.

The business being finished, the president called for the reading of papers; as there were no papers to be read, several interesting cases were described by members that had occurred in their practice, which were well discussed and many opinions advanced. Meeting adjourned at 5 p. m.

Members in attendance: Thos. Bland, H. E. Bates, C. H. Beere, G. T. Crowley, G. L. Cheney, G. E. Corwin, Jr., B. K. Dow, P. F. Finnigan, J. J. Flaherty, A. T. Gilyard, L. B. Judson, P. T. Keeley, G. W. Loveland, J. J. Moynahan, J. E. Underhill, H. Whitney, C. R. Witte and I. R. Vail. Visitors: Dr. B. D. Pierce, Springfield, Mass.; T. E. Robinson, Westerly, R. I.

B. K. Dow, Secretary.

B. A. I. VETERINARY INSPECTORS ASSOCIATION OF CHICAGO.

The regular monthly meeting of the B. A. I. Veterinary Inspectors Association was held at the Saddle and Sirloin Club, Friday evening, April 10, 1914.

The meeting was featured with a short talk by Dr. L. Enos Day, pathologist at the Chicago station, on tuberculin, its preparation, and theories as to how it causes the reaction.

Several problems of post-mortem inspection were fully discussed by the members present.

Dr. W. N. Neil, the new inspector in charge, was elected to membership in the association.

B. J. STOCKLER, Secretary.

THE CORNELL VETERINARIAN BECOMES A QUARTERLY.—We notice in the April issue of the *Cornell Veterinarian* that it has started as a quarterly instead of half yearly publication. That suggests progress, and recognition of merit by the profession, and we congratulate its editors. It is a high-class, strictly ethical periodical; qualifications that must attract to it, the right sort of supporters.

VETERINARY PROFESSION REPRESENTED: In looking over the excellent programme of the Louisiana State Medical Society, which held its 35th annual meeting in New Orleans, April 20 to 23, we find the veterinary profession represented by Drs. A. D. Melvin, W. H. Dalrymple and R. W. Tuck. We *frequently* see physicians' names on the programmes of veterinary meetings, and should like to see veterinarians' names *more frequently* on medical association programmes. It is a healthy cross.

GERMAN OFFICIAL RESPECT FOR THE HORSE.—An attache of the American Embassy in Berlin sends a circular that is being distributed through the German Army, as follows:

MEN AND HORSES.—In the army of the Fatherland horses have always played an important part. We owe a great debt to our horses for service, both in times of war and peace.

And it is hoped that all good soldiers will see to it that the rights of our dumb brothers are respected.

Our horses are entitled to food, water, bedding and shelter just as exactly as a trooper is.

But beyond this it must be remembered that a horse should not be insulted or distressed, either by cruel treatment or vehement language. * * * —(*The Horse Lover*—April, 1914.)

NEWS AND ITEMS.

Secretary Mayo Bids for Five Hundred New Members: In starting on the second half of the century run of the A. V. M. A., Secretary Mayo is putting forth his best energies, and expresses an ambition to increase the membership by 500 members this year. With a continuation of the healthy condition now enjoyed by the association, growing steadily better from year to year, such a thing is quite within the range of possibility if every present member lends his little "boost." See how many *you* can bring in.

United States Civil Service Examination—Veterinarian (Male)—May 20, 1914.—The United States Civil Service Commission announces an open competitive examination for veterinarian, for men only, on May 20, 1914. From the register of eligibles resulting from this examination certification will be made to fill vacancies in the position of veterinary inspector in the Bureau of Animal Industry, Department of Agriculture, at entrance salaries of $1,400 per annum, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

It is probable that a large number of appointments will be made in the near future.

Competitors will be examined in the following subjects, which will have the relative weights indicated:

Subjects.	Weights.
1. Letter writing	10
2. Veterinary anatomy and physiology	20
3. Veterinary pathology and meat inspection	30
4. Theory and practice of veterinary medicine	30
5. Education, training and experience	10
Total	100

This examination is open to all men who are citizens of the United States and who meet the requirements.

Persons who meet the requirements and desire this examination should at once apply to the United States Civil Service Commission, Washington, D. C.

Dr. S. R. Howard Convalescent: The many friends of Dr. Howard, Hillsboro, Ohio, will be glad to learn that the doctor is now convalescent after a pretty hard siege, first from illness, then from an accident, which resulted in the breaking of some ribs. He has our sincere sympathy.

Dr. S. E. Bennett Leaves Chicago, Where He Has Been Inspector in Charge of the B. A. I. Service for Eight Years.—The employees of the B. A. I. Service in Chicago gave a "Smoker" to Dr. Bennett at the Saddle and Sirloin Club on the evening of April 1st, and extended a welcome to his successor, Dr. W. N. Neil. Dr. Bennett has been placed in charge of hog cholera eradication in Indiana, with headquarters at Crawfordsville. Many after-dinner addresses added to the evening's enjoyment.

Dinner to New York Physician Fifty Years in Practice.—The colleagues and friends of Faneuil D. Weisse, M.D., gave him a dinner at the Hotel Astor on March 28th last, at which 300 of his colleagues in the medical and dental professions, and friends, were present to honor the good doctor and celebrate the occasion of his fiftieth year in practice. Dr. Weisse is known to the medical profession everywhere, who acknowledge him as a past master in anatomy—having written standard works on it—and as the father of dental surgery in America; which branch of surgery he raised to its present high standard in this country. And to-day, as Dean of the New York College of Dentistry, he is still exerting his best efforts in behalf of that branch of human surgery. But the name, Dr. Faneuil D. Weisse, also means much to the veterinary profession of America. Graduates of the American Veterinary College prior to its amalgamation with the New York College of Veterinary Surgeons in 1899, affectionately remember Dr. Weisse and his kindly words of advice in his opening addresses to the students each year. Those men whose privilege it was to have listened to him will never forget him, whether it was 29 years ago or 15 years ago, and will always associate the name of Faneuil D. Weisse, M.D., with the American Veterinary College; as he has always been a close friend of Prof. Liautard, and officiated as Secretary of the Board of Trustees from 1875 to 1885, and President of the Board from 1885 until the amalgamation and adoption by New York University in 1899. His place in the hearts of his friends and colleagues was attested by the festive gathering in his honor on March 28th, at which gathering (although fifty years active professional work lay behind him) he was among the merriest of those present.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n.....	Mar. 5-6-7, 1914	Auburn.....	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.....	June 10, 1914.....	141 W. 54th St..	P. K. Nichols, Port Richmond, N.Y.
American V. M. Ass'n.....	Dec., 28-31, 1914	New Orleans, La	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n.....	January 5-6, 1915 ...	Little Rock. ...	R. M. Gow, Fayetteville.
Ass'n Médécale Veterinare Française. "Laval".....	1st and 3d Thur. of each month.....	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. each month..	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha.....	3d Mon. each month.	S. Omaha, Neb..	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n.....	Monthly.....	St. Joseph and vicinity	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n.....	December 10, 1913..	San Francisco..	John F. McKenna, Fresno.
Central Canada V. Ass'n.....	Feb. and July.....	Ottawa.....	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n.....	June and Nov.....	Syracuse.....	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. each month.	Chicago.....	D. M. Campbell, Chicago
Colorado State V. M. Ass'n.....	May 28-29, 1914 ...	Ft. Collins.....	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n.....	Aug. 4. 1914.....	Waterbury.....	B K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan., Apl., July. Oct..	Wilmington.....	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.....	3d Mon. each month.	Newark, N. J....	J F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	2d week, July. 1913..	Rochester.....	J. H. Taylor. Henrietta.
Georgia State V. M. A.....	Dec. 22-23, 1913	Atlanta.....	P. F. Bahnsen, Americus.
V. M. A. of Geo. Wash. Un'y.....	1st Sat. each month..	Wash., D. C....	I. M. Cashel.
Hamilton Co. (Ohio) V. A.....			Louis P. Cook, Cincinnati.
Illmo Vet. Med. Ass'n.....	Mar. 26, 1914.....	Belleville, Ill....	L. B. Michael, Collinsville, Ill.
Illinois State V. M. Ass'n.....	December, 1913.	Chicago.....	L. A. Merillat, Chicago.
Indiana Veterinary Association.....	Jan. 14, 1914.....	Indianapolis....	A. F. Nelson, Indianapolis.
Iowa Veterinary Ass'n.....	Pending.....	Pending.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n.....	Jan. 6-7-8, 1914.....	Manhattan.....	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb.each year	Lexington.....	Robert Graham. Lexington.
Keystone V. M. Ass'n.....	2d Tues. each month.	Philadelphia....	Cheston M. Hoskins.
Lake Erie V. M. Association.....	Pending.....	Pending	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n.....	Sept., 1914	Lake Charles...	Hamlet Moore, New Orleans, La
Maine Vet. Med Ass'n.....	July 3, 4, 1914	Houllon.....	H. B. Wescott, Portland.
Maryland State Vet. Society.....		Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. each month	Young's, Boston.	J. H. Seale, Salem.
Michigan State V. M. Ass'n.....	Feb. 3, 4, 1914.....	Lansing.....	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n.....	Jan. 14-15-16, 1914..	St. Paul	G. Ed. Leech. Winona.
Mississippi State V. M. Ass'n.....	Aug. 29. 1913.....	Starkville.....	Wm. P. Ferguson, Grenada.
Missouri Valley V. Ass'n.....	Jan., 27, 28, 29, 1914	Kansas City,Mo.	Hal. C. Simpson, Denison, Ia.
Mississippi Valley V. M. Ass'n.....	Semi-Annually —Call of Chair.....	Galesburg, Ill...	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n.....	July, 1913.....	Kirksville.....	S. Stewart, Kansas City.
Montana State V. M. A.....	Sept. 24, 25, 1913.	Helena.....	A. D. Knowles Livingston
Nebraska V. M. Ass'n.....	1st Mo. & Tu.,Dec.'13	Lincoln, Neb...	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.....	August 11-12-13,1914	Rochester.....	H J Milks. Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June, 1914.....	Wilson.....	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n.....	Week of July 20, 1914	Fargo.....	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.....	Nov. 1913.....	Delphos.....	E. V. Hover, Delphos.
Ohio State V. M. Ass'n.....	Jan. 14, 15, 1914.....	Columbus.....	Reuben Hilty. Toledo.
Ohio Soc. of Comparative Med.....	Annually.....	Upper Sandusky.	F. F. Sheets, Van Wert. Ohio.
Ohio Valley Vet. Med. Ass'n.....			J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n..	Fall, 1913.....	Oklahoma City..	C. E. Steel. Oklahoma City.
Ontario Vet Ass'n.....	1st Week in Feb.1914	Toronto.....	L. A. Willson. Toronto.
Pennsylvania State V. M. A.....	Mar. 3. 4, 1914.....	Philadelphia....	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President....	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. each month.	Portland, Ore...	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.....		Mon. and Que...	Gustave Boyer. Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June.....	Providence.....	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns....	Pending.....	Pending.....	B. K. McInnes. Charleston.
South Illinois V. M. and Surg. Ass'n..	Aug. 4-5-6 1914.....	Salem.....	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors.....	1st Wed. fol. the 2d Sun. each month..	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	June 17, 1914.....	Reading.....	W. G. Huyett. Wernersville.
Soc. Vet. Alumni Univ. Penn.....		Philadelphia....	B. T. Woodward Wash'n, D. C.
South Dakota V. M. A.....	Pending.....	Madison	S. W. Allen. Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.	Jan. Apl., July, Oct..	Los Angeles.....	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp..	4th Tues. each month	407 Illinois Ave.	H. R. Collins, South St. Joseph
Tennessee Vet. Med. Ass'n.....	November. 1914.....	Nashville.....	O. L. McMahon, Columbia.
Texas V. M. Ass'n.....	Nov., 1913.....	College Station..	Allen J. Foster. Marshall
Twin City V. M. Ass'n.....	2d Thu. each month..	St. P.-Minneap..	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Spring of 1914.....	Salt Lake City..	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n.....			G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can
Vet. Ass'n Dist. of Columbia.....	3d Wed. each month	514 9th St., N.W.	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ...	1st Sat. each month.	Wash'ton, D. C.	J. M. Cashell, 2115 14th Street.
Vet Ass'n of Manitoba.....	Feb. & July each yr..	Winnipeg.....	Wm. Hilton, Winnipeg.
Vet. Med. Ass'n of N. J.....	January 8, 1914.....	Trenton.....	E. L. Loblein, New Brunswick.
V. M Ass'n, New York City.....	1st Wed. each month.	141 W. 54th St..	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City.....	T. F. O'Dea Union Hill, N. J.
Virginia State V. M. Ass'n.....	July 9-10 1914.....	Staunton.....	Geo. C. Faville, North Emporia.
Washington State Col. V. M. A.....	1st & 3d Fri. Eve....	Pullman.....	R. J. Donohue, Pullman.
Washington State V. M. A.....	June 18-19, 1914....	Walla Walla....	Carl Cozier, Bellingham.
Western Penn. V. M. Ass'n.....	3d Thu. each month..	Pittsburgh.....	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad.....	Feb. 10, 11, 1914....	Milwaukee.....	W. W. Arzberger, Watertown.

PUBLISHERS' DEPARTMENT.

Subscription price, $3 per annum, invariably in advance; Canadian subscriptions, $3.25; foreign countries, $3.60; students while attending college, $2; Students in Canada, $2.25; single copies, 30 cents in U. S. **Copy for advertisements should be received by 10th of month.**

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There has been no change whatever in the personnel of the officers, directors, stockholders, or in the management of the business. Harry C. Moore, whose name now becomes part of the corporate name, has been president of the company and has had the general management of the business for several years. Advertisement running on page 3 (Adv. department.)

STATEMENT OF THE OWNERSHIP, MANAGEMENT, ETC., OF THE AMERICAN VETERINARY REVIEW, PUBLISHED MONTHLY AT 509 WEST 152D STREET, NEW YORK, N. Y., REQUIRED BY THE ACT OF AUGUST 24, 1912.

Editors—A. Liautard and Robt. W. Ellis, 509 West 152d Street, New York.
Managing Editor—Robt. W. Ellis, 509 West 152d Street, New York.
Business Manager—Robt. W. Ellis, 509 West 152d Street, New York.
Publisher—American Veterinary Review, 509 West 152d Street, New York.

Owners: (If a corporation, give names and addresses of stockholders holding 1 per cent. or more of total amount of stock)—A. Liautard, 14 Ave. de l'Opera, Paris, France; Robt. W. Ellis, 509 West 152d Street, New York, N. Y.; G. M. Ellis, 509 West 152d Street, New York, N. Y.

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(My commission expires March 30, 1914.)

AMERICAN VETERINARY REVIEW.

JUNE, 1914.

EDITORIAL.

EUROPEAN CHRONICLES.

Paris, April 15, 1914.

SUB-CUTANEOUS TUBERCULOSIS.—In human medicine, this question, it is well known, has been the subject of many communications, and the object of thorough study. In veterinary medicine, on the contrary, it is considered as very rare, but about fifteen cases are on record.

At one meeting of the *Société Centrale de Medecine Veterinaire,* a very valuable paper was presented by Veterinarians Ch. Perard and G. Ramon where the sub-cutaneous tuberculosis of bovines was treated at some length and where the attention was called to this peculiar manifestation, which includes the lesions of the hypodermis and those located between the fibres of the superficial muscles.

The macroscopic aspect of these alterations differs from that of classic tuberculosis, and on the contrary are closer either to that of cancerous diathesis or of sporotrichosis or of blastomycosis. The microscopic and bacteriologic diagnosis is as difficult to make as the macroscopic.

Named *tuberculids* in human medicine, those lesions have been explained by various theories. They are due to rare virulent bacilli, coming from a deep visceral center, or to bacillar remains free or inclosed in leucocytes, or again to embolies of bacilli weakened and of little virulency or even of dead bacilli.

The writers have observed animals during life. The skin was studded with nodosities of different forms, varying between

the size of a pea and that of a hen's egg, and were particularly located on the upper region of the body, the neck and the shoulder. These nodosities were hard, painless and sometimes adherent to the skin.

At the post mortem, the subcutaneous tumors were found with their irregular form and their various distribution, some were adherent to the skin, most of them were on the surface of the superficial muscles or between their fibres.

On a section of their tissue the most frequent appearance was that of a homogenous firm tissue, white-yellowish, sometimes with darker punctiform spots, or again showing right across more or less irregular bands, radiating and resembling the caseification, called radiated by Bongert.

Sometimes nodosities no bigger than a pea were found that showed in their center softened caseous matter or again undergoing caseification. They are the type of caseous nodules. A third variety of lesions intermediate to those two types may also, with them, be found on the same animal.

The lymph glands corresponding to the regions invaded by those lesions may be tuberculous, but most generally they are free from disease. In the cases observed by Perard and Ramon these tuberculids co-existed with lesions in the lungs and of some lymphatic glands and internal organs.

The histological constitution of these nodosities varies very much and careful examination is required to be certain that they are lesions due to the Bacillus of Koch. The presence of the bacillus in frottis and upon sections of tissues has been negative with the authors and experimental examinations were unsatisfactory.

Altogether, these lesions, as far as their structure and the point of view of virulency, resemble those of subcutaneous tuberculosis of man; and compared with the lesions ordinarily found in bovine tuberculosis they form a special group by their macroscopic and microscopic aspect and also by their variable inoculability.

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Infectious Paraplegia.—In one of the reviews that Prof. Cadeac, of Lyon, so frequently publishes in the *Journal de Zootechnic,* the learned writer treats of this disease, which has presented to us so many points of resemblance with the affection that is so frequent in the States and that is known under a different name, that I felt an analysis of the professor would prove of unusual interest.

Under the name of infectious paraplegia must be understood a disease, with enzootic aspect, observed in solipeds (horses and mules) characterized clinically by paresia or paralysis of the hind quarters and anatomically with congestive and hemorrhagic changes in the spinal cord.

The history of the affection is somewhat recent, and it is not until 1885 that it is described successively in France, Germany, Sweden, Denmark, Italy and in India.

The disease essentially consists in a toxi-infection of the spinal cord and of its envelops.

The microbian agent has been described as a small bacillus, a micrococcus by Blin and Lambert, as a colibacillus by Thomassen and as a steptococcus by Schlegel, Zwick and Perrucci. This last is the only one where the pathogenous action has been studied. It is found in the urine, in the serosity that infiltrates the genito-urinary organs, in the blood, the spinal cord, the marrow of bones, and the parenchymatous organs. Once in the organism it gives rise to a spontaneous streptococcy, which is propagated by natural contagion and is transmissible by inoculation.

Artificially, the paralysis of the hind quarters and all the troubles of infectious paraplegia of horses can be reproduced in small animals. The injection of massive doses of culture of the microbes in the venous system of horses gives rise only to a temporary weakness of the hind quarter, and yet 10 cubic centimeters in the jugular have been followed by the appearance of the disease with Perrucci, and repeated injections of small doses has with Zwick given rise to infectious paralysis.

The natural infection takes place by the genito-urinary apparatus and the digestive canals.

The contagion occurs through the bedding of the animals and the tools used for them, sponges, curry combs, etc. Diseased animals infect rapidly those round them. The transmission may take place at some distance in large gatherings of horses.

The introduction in a stable of a piece of the carcass from an animal that had died a natural death and which had been soiled with infected urine was followed by the development of the disease in that stable.

Mares are more frequently affected than horses, as their genitals are less protected and the introduction of the germs can take place more readily.

While the genital organs form probably the best door, the digestive canal is also an important entrance for the microbe.

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* *

The introduction and propagation of the microbe, according to its localization give rise to three forms of manifestations, hence three forms of disease, the *bulbar,* the *brachial* and the *lumbar.* The period of incubation seems to be short; animals being taken from one or four days after the exposure to an affected animal.

Without febrile indication, only a slight dullness, an unwillingness to move and then appear the symptoms of the various forms.

In the *bulbar,* dull and lazy to move, the animal is stiff and has a staggering walk. He stands quiet in his stall, the head down, eyes closed and remains insensible to all excitement. From the first, there is labio-glosso-pharyngeal paresia, mastication and deglutition are difficult. Soon after one or two days, these symptoms of paralysis are well marked; the respiration becomes slow, the pulse almost imperceptible, the disease becomes generalized, the horse lays down and dies between 24 hours and 2 or 3 days without convulsions.

In the *brachial* form the horses, as they come out, move their forelegs with less freedom, like foundered animals; they stumble, fall on their knees. They sometimes get up of themselves, but again may have to be raised. Gradually, however, the branchial forequarter is completely taken and is followed by the invasion of the hind legs.

With the *lumbar* form, the first symptom is the paresia of the hind legs. The horse, while at rest, seems to be in perfect health; as soon as he is moved shows inco-ordination of his movements, the hind legs tremble, the horse has a staggering walk, the fetlocks flex, the toes of the feet scrape on the ground, trotting is impossible. The loins are very sensitive to pressure. The tail is flaccid and motionless. The urine is expelled, cloudy, viscous, not tinted red brown as in hemoglobinuria.

In horses the sheath is swollen, the penis hangs out; in mares the vulva is oedematous and the vagina congested.

With either of the three forms, the disease may have a similar development, very rapid, striking, or acute, or, again, sub-acute.

In the rapidly striking, death occurs in a few hours by general intoxication of the whole nervous system.

The acute may last from 24 hours and not longer than three days. With it also, a fatal termination is the rule.

In the sub-acute, the symptoms gradually subside, sometimes rapidly, and the animal appears in convalescence. Yet if he has been kept in slings one must be careful not to be too hasty to take them off entirely, as relapses are very frequent. This sub-acute form generally lasts 8 or 10 days.

* * *

The lesions are limited to the vagina and bladder in the lumbar form at the outset of the disease, but they rapidly extend and become generalized. The spinal cord and the envelops are congested more or less in the lumbar, brachial or bulbar region. There are also secondary general lesions.

The diagnosis is based on four principal signs: Paralysis of the hind quarter, cloudy viscous urine, swelling of the external genital organs, contagiosity of the disease.

In spontaneous cases, it may be sometimes difficult to differentiate the disease from hemoglobinuria, but the condition of the genital organs and the absence of hemoglobine in the urine are characteristic of the paraplegia.

Epizootic cerebro-spinal meningitis resembles infectious paraplegia very much, by its contagious nature and the absence of hyperthermia, but it is distinguished from it by the convulsive contractions of the superior cervical muscles and by the general troubles.

The prognosis from any point of view is always serious.

The treatment is prophylactic and curative. Isolation of the sick, disinfection of locals, stables, change of bedding, etc., etc.

Curative treatments of various natures have been recommended and left aside. The use of slings, when possible, is always to be recommended. Bleeding has done good. Boric irrigations of the bladder, injections of artificial serum, polyvalent antistreptococcic serum, caffeine, ether, nux vomica, strychnia, etc.—but almost always have given negative results.

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Auricular Catarrh in Dogs.—As writes Prof. Hebrant in the *Annales de Medecine Veterinaire,* the inflammation of the internal face of the external ear, of the concha, more commonly known as auricular catarrh, whether its origin is parasitic or of other nature, is not always limited to the superficial part of the skin nor to the portion which can be explored. In other words, all the cases are not only localized catarrhal affections. There are causes which may render the extent of the diseased process, may modify its depth and may in fact be the result of diathesic influence as for instance the herpetic diathesis. In such condition, it is easy to appreciate the difficulty in obtaining a rapid and lasting recovery.

Complications are not uncommon, and Prof. Hebrant calls the attention to three principals, which are important to bear in mind.

First, the *inflammation of the external auditory canal* and of the membrana tympani. It generally occurs in neglected cases or in those which are rebellious to treatment. The inflammation, developed by continuity of tissue, promotes a circular swelling, a repletion of the glands which secrete more abundantly and whose products dry up and close more or less the passage of sounds. Sometimes pus drops into the canal, collects, reaches the tympanum, which is macerated and perhaps ulcerates.

In another condition *there is formation of polypy growths in the bottom of the external ear.* This frequent complication is the result of chronic dermitis, developing on the papillary elements of the skin. In all the cases or auricular catarrh, there is a local swelling of the skin, due to interstitial exudate; and when it is abundant it may give rise to an increase in the size of the irregular folds of the bottom of the concha and thus obstruct it. This local swelling often remains, a true chronic dermitis, frequently observed even after the recovery of the original trouble.

The third condition referred to by the Professor is the *inflammation of the cartilage of the concha itself,* and in relation to it there is mentioned the case of the dog which had that peculiar chondritis in both ears. The concha was such that the bottom of the cartilage was completely obliterated and the dog completely deaf. The dog was a pointer—his condition rendered him perfectly useless.

Both ears were very thick, painful and the auditory canal completely obliterated, the circular cartilage forming a perfect hard ring. The concha at that point was several centimeters thick, adhering to the lining skin. That of the outside surface being loose over it. The amputation of the cartilages was the only way to relieve the deafness of the animal. This was done by the dissection of the cartilage, saving the external cutaneous covering. The wound of the left ear cicatrized after two weeks,

but that of the right had profuse granulations which demanded peculiar attention and probably left lesions on the membrane tympany. At any rate, the result was complete in one sense, as hearing could take place by the left ear and the dog able to perform his duties.

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* *

Sterility in Cows.—In the *Deutsche tier, Wochenschrift,* Doctor Gebauer, Veterinarian, calls attention to this subject and to the ovarian operation which is recommended against it.

Notwithstanding the publications of Hess, of Zschokke and of Schumann, where was recommended the enucleation of the Corpora Lutea to overcome sterility of cows, this operation is still little practised by veterinarians because it is not known or again because they had no faith in it, by want of sufficient statistics.

For the author, however, it is an operation easy and beneficial, which is bound to enter current veterinary practice. He has himself performed it several hundreds of times.

The indications are given by the exploration of the ovaries. Dr. Gebauer examines systematically: 1. Any heifer which has passed the second year without having shown manifestations of being in heat. 2. In stables where sterility prevails, all cows served since eight weeks about, whether or not again in heat. 3. Any cow which, about two months after calving, is not yet again in heat.

It is sufficient to introduce the right hand in the rectum to easily detect the presence of the two ovaries and feel them with the pulp of the fingers without it being necessary to pull them backwards. It is thus permitted to recognize if they present abnormal protuberances, answering to persisting or hypertrophied corpora lutea or again to cysts. The ovary is then seized in the hollow of the hand, so as to bring the morbid elevation on the pulp of the thumb, and it is squeezed with the index against it. The corpora lutea is thus expelled from the

ovary, or if it is a cyst, it is burst. There remains then a small cavity where the end of the thumb can be introduced. It must be remarked that cysts are rare and that it is almost always that corpora lutea, hypertrophied and generally single, that are easily enucleated.

The operation is simple and one can readily make himself familiar with it in practising on fresh ovaries of cows killed. Following this method, there are no risks of tearing the ovary.

Rupture of the cysts is without danger. When corpora lutea are present, it is good after their enucleation to apply over the ovary moderate pressures for a few seconds. If, exceptionally, hemorrhage should occur, hemostatic injections are resorted to. Ergotine has been used successfully twice by Gebauer.

Sixteen cases are recorded then with their excellent results. Thirteen of these were in cows which without being pregnant had not been in heat since several months; after the operation, ten became in season after 4-19 days; nine of them were fecundated after a few coverings and one after the second; eight had a normal parturition. The three remaining became in heat respectively the 34th, the 50th and the 90th day after the operation. They were fecundated.

Ovarian squeezing is a simple operation that veterinarians can use with benefit to them and to their clients.

* * *

Nervous Lesions in Intoxication by Worms.—Nervous symptoms, sometimes very serious, have for a long time been observed in subjects infected with worms, and yet there exists no anatomopathological description of the nervous lesions found in man or in animals that died because of the helminthiasis. At any rate, one has rarely the opportunity of making the post mortem of one where death was exclusively due to an intoxication from worms, which most commonly is complicated with a secondary infection. In such cases it would be difficult,

when considering the lesions found to select the part played by each of the morbid factors.

Mr. Rachmanow, in the laboratory of Dr. Weinberg, of Pasteur Institute, has written for the *Annales of the Institute* an article where he relates the experiments that he was called to institute, while thinking that the study of the nervous system, in the experimental intoxication by worms, could determine if the toxines secreted by the worms were truly able to promote the formation of nervous lesions and to what point the nervous phenomenas observed in man and animals carriers of helminths could be said to be caused by the action of these parasites.

In the *Annales de l'Institut,* the writer states that he has made three series of experiments. In the first, he examined the central nervous system in the direct intoxications; in a second, he treated the indirect intoxications or the anaphylaxy by worms; and in the third the condition of the nervous system in serial anaphylaxy was considered. From the experiments the following conclusions were drawn:

1. The central nervous system of guinea pigs does not always react in the intoxication by worms. Nervous lesions are not found in this animal except when he presented during life more or less serious clinical symptoms. Some individuals may resorb products from worms without presenting the slightest nervous reaction.

2. The lesions that are observed in the acute and sub-acute intoxication are on the nervous cell, the neuroglic cell and upon the fibre of the white substance. Besides the different degrees of chromatolysis, the nervous cell presents often a large number of sinuous canals hollowed in the whole thickness or in a part of its protoplasm. In severe cases, the nucleus is displaced towards the periphery of the cell and shows a deformed nucleolus. The neurofibrilla are preserved in light forms of intoxication, but in severe cases they disappear.

The neuroglic cell offers the various stages of the "amiboid" transformation; it keeps its form, but its nucleus becomes pycnotic, or again it takes the aspect of the amiboid cell of

Alzheimer. There is also found, especially in cases of chronic intoxication, an abnormal collection of neuroglic elements round nervous cells (phenomenas of neurophagy). In the same conditions the fibres of the white substance are also altered; they are tumefied, but in an irregular manner.

3. The lesions of the brain and spinal cord in anaphylaxy by worms are very small or do not exist, if the guinea pig dies with very acute anaphylactic shock in three to ten minutes. They are, on the contrary, very pronounced if the serious anaphylactic phenomena have lasted some time, half an hour or more. They present the same characters in both the acute or the chronic intoxication.

4. The lesions of the central nervous system observed in animals, anaphylactized with horse serum, are exactly similar to those of the anaphylaxy by worms.

5. As the lesions of the nervous system are much more marked and frequent in the anaphylaxy by worms than in the direct intoxication by the parasitar products, it seems probable that the nervous phenomena, sometimes very severe, as for instance, symptoms of meningism, observed sometimes in some helminth carriers, must be considered as being of anaphylactic nature. A. L.

THE GLANDERS QUESTION.

Glanders, like the poor, is always with us, and from what we can learn, has always *been* with us. But is it always to *stay* with us? Sometimes we think so, when we find that we are gaining so little in our fight against it in the big cities. For some time the watering trough has been conceded a prolific source of contagion, and many new kinds of troughs have been recommended to overcome the danger of contamination of the water; but glanders has continued on the increase despite these precautionary efforts; the probable reason being that the *improved* troughs have not overcome the danger; the contamination remains. That has brought us face to face with the realization that the only way to

remove the danger of contamination of glanders from horse to horse through the watering trough is a very radical measure, *i. e.*, the removal of the watering trough. That has been done in Minneapolis with a striking diminution of the cases of glanders in that city. It has been found necessary to do it in Philadelphia, where glanders was found to be on the increase; it has either been done, or about to be done, in Jersey City, N. J., and a strong movement is on foot in New York to substitute the trough by the faucet. This movement was started by the Grand Jury of Bronx County. Some of the members of said Grand Jury having lost a number of valuable horses from glanders had a committee of this Grand Jury make a personal investigation of some of the public watering troughs of the Bronx, which resulted in the presentment which follows:

To Honorable John J. Brady, Justice of the Supreme Court of the State of New York, in and for the County of Bronx:

We, the members of the Grand Jury of the County of the Bronx, for the April Term, 1914, respectfully present as follows:

We have heard the complaints made as to the prevalence of the infectious disease of glanders, so dangerous to the animal life of the County, and more particularly to the horses thereof and so ravaging in its effects.

Our investigation briefly has disclosed the fact that six of our commercial houses in our County have within three months lost sixty-eight horses through the disease and in each case the inception of the disease in the stables of the persons complaining was traceable to the existence of the public horse-watering troughs in the County. These troughs, as is well known, exist on street corners and are used by horses which are then without the knowledge of the owners and drivers suffering from this dread disease. The water becomes infected, is covered with slime, filth, and spreads contagion broadcast amongst the animals.

These street fountains are in addition a source of great waste of water and in that way of great expense to the City. They cause blockades of our street traffic.

The Commissioner of Agriculture of the State of New York has advised us that glanders is not alone costly to the owners of the horses, but also to the State, which is compelled annually to spend thousands of dollars in butchering horses apparently well but glanders-stricken.

We are also informed by competent witnesses that it is the practice and habit of push-cart peddlers and truck-cart vendors to dip pails of water out of these troughs and with the water thus obtained to sprinkle their merchandise.

Thus it will be seen that the disease is even a menace to the public, irrespective of the horse owners.

For all of these reasons we are of the impression that all further maintenance of these germ-breeding and disease-carrying troughs is a menace to the community second to none, and more particularly by reason of the approach of the heated season.

We respectfully recommend that a copy of this presentment shall be forwarded to the Board of Aldermen of the City, the Commissioner of Health of the City, and the State Commissioner of Agriculture, to the end that proper steps may be taken for the eradication of the evil.

We recommend that these troughs shall be abolished and in their place and stead erected hydrants or pumps with automatic shut-offs, and that each wagon driver desirous of watering his stock shall be compelled to carry with him a pail for that purpose and that purpose alone.

Dated, April 23, 1914.

A copy.

JAMES V. GANLY,
Clerk.

LEVI A. WARD,
Secretary.

F. A. WURZBACH,
Foreman.

This presentment has stirred into activity many bodies of men who have the horse interests and the welfare of the public close to their hearts. Through it the Board of Aldermen of New York City introduced an ordinance to abolish watering troughs and substitute automatic shut-off faucets, and compelling all horse owners to equip vehicles with pails from which the horses of that vehicle must be watered. This ordinance was referred to the Health Committee of the Board of Aldermen, where it still was at the time of this writing. A later meeting will be called at which all parties interested will be given an opportunity to discuss the question. Further evidence of the activity aroused by the *presentment* is shown by the fact that a conference was called on May 20th at the office of the Lincoln Safe Deposit Company in New York, at which there were present, representatives from the Van Owners' Association, from the American Society for the Prevention of Cruelty to Animals, from the Women's League for Animals, from the Horse Owners Association, from the New York City Board of Health, and from the New York State Department of Agriculture. Dr. Emerson, Deputy Commissioner of Health, presented the sanitary side of the question in a manner that convinced his auditors; and finally, as a result of this conference a committee was appointed to confer with the American Society for the Prevention of Cruelty to Animals. As soon as this organization, and other similar ones, understood that the intention was substitution, not mere abolition on the part of those who are endeavoring to check the spread of glanders and protect public health, any opposition that they

may have previously felt seemed to disappear, and their co-operation is anticipated. Especially as the substitute can be shown to be far superior to the old method in supplying water to tired and thirsty animals, while not exposing them to the dangers of contagion that exist under the old method. Among the advantages of the faucet system over the trough (leaving aside the question of contagion altogether), is the saving of time, as a fountain that would supply a large trough can be fitted with numerous faucets from which many drivers can fill pails and water their horses at the same time. Besides, as suggested at the meeting of the Keystone Veterinary Medical Association in Philadelphia in May, the same pails can be used for "sousing" the horses in warm weather. The president of the Pennsylvania Society for the Prevention of Cruelty to Animals, who was present, expressed his approval and intimated that his society would be glad to furnish new pails to at least some of those who might not have them. And so it would seem that there will be no serious difficulty in establishing this new method of supplying fresh, clean water to the horses of those of our big cities who have not already adopted it, and its advantages from a sanitary viewpoint are obvious, and need no argument. Whenever that has been accomplished it means that a great source of contagion has been eliminated; but it must become *general* to be effective, and we shall therefore hope for its accomplishment in the shortest possible time in every city in our land. We trust, therefore, that veterinarians everywhere will see it as their duty to work this reform in their own cities. They will not find it difficulty to get the people with them if they take steps to convince them of the danger their animals are exposed to through this medium. Sanitarians have long since recognized the danger of the public drinking cup for human beings, and how much more patent is the danger in the public watering trough for horses, when we consider the different method of drinking in the case of the horse as compared with man. Call the horse owners of your communities together and address them publicly on this very important sanitary question. The veterinarians of a community,

flanked by one or two broad-minded, public-spirited physicians, can clearly demonstrate to the public the danger of the present system. We intended to discuss other phases of the glanders question, but will take up another phase next month, and conclude by requesting veterinarians throughout the country to let us know their attitude on the public watering trough, and what system of street watering of horses prevails in their respective communities.

BON VOYAGE.

There is only time to say the last word to our friends who will sail from New York Harbor June 13th on the steamship Finland of the Red Star Line, beginning their trip on the *Official Tour of Europe* under the direction of Dr. Eichhorn. To those in New York and vicinity, it will be a pleasant thing to go down to the pier and see their friends off. At the time of this writing the following had been booked for the trip: Dr. Adolph Eichhorn, Washington, D. C.; Dr. C. J. Marshall and Mrs. Marshall, Philadelphia; Dr. E. H. Shepard, Cleveland, Ohio; Dr. F. B. Hadley, Madison, Wisconsin; Dr. F. B. Harries, Calgary, Alberta, Canada; Dr. L. Enos Day and Mrs. Day, Chicago, Ill.; Dr. T. Lambrechts, Montevideo, Minnesota; Dr. W. Reid Blair and Mrs. Blair, New York, N. Y.; Dr. W. B. Holmes, Springfield, Illinois; Dr. J. M. Armstrong, East Providence, R. I.; Dr. S. Stewart and Mrs. Stewart, Kansas City, Mo.; Mr. H. C. Moore and Mrs. Moore, Indianapolis, Ind.; and Mr. Joseph K. Kerrick, Philadelphia, Pa. But it is altogether likely that several more will book before the time of sailing, as we know of some that have been endeavoring to get matters settled with that end in view that have not yet been able to do so. The Red Star Line dock is at Pier 59, North River, and the exact time of sailing may be obtained by communicating with the general office, No. 9 Broadway; telephone 2100 Rector. We would like to see a large delegation at the pier to wish our brothers and sisters *bon voyage,*

and know it will be appreciated by them. For those throughout the country who cannot get to the pier, the REVIEW says for them, *bon voyage*.

OFFICIAL STEAMER TO THE CONGRESS.

For those who will attend the Congress in London, August 3d to 8th, but who cannot arrange to avail themselves of the official tour, the Bureau of University Travel have a nice arrangement to offer, whereby all those going to the Congress from this side may have the pleasure of crossing the Atlantic together, thus greatly enhancing the pleasure of the trip. They have chosen the steamship Minneapolis of the Atlantic Transport Line, sailing from New York July 25th. Minimum rate, first cabin, $85; 25 per cent. discount on all rates above the minimum. All going on either this steamer direct to London or the earlier one will be able to secure accommodations at the Hotel St. Ermins, as stated in the May REVIEW, by communicating with the Bureau of University Travel, 31 Trinity Place, Boston, Mass. The rate at the St. Ermins is 14 shillings ($3.50) a day, American plan.

THE HEARINGS ON THE LOBECK BILL.

As announced on page 146 of the May REVIEW, the hearings on the Lobeck Bill came before the Committee on Agriculture in the House of Representatives on April 20, 1914, and we have since received a copy of the hearings and read the addresses we stated were to be given at that time. We now urge, at the suggestion of National Secretary Walkley, that all veterinarians and veterinary students write to their respective Congressmen for a copy of the "Hearings," and urge the Congressman to use his influence to have the House Committee report favorably on H. R. 9292 at an early date. The doctor also requests that any one receiving lukewarm replies to their requests from their

Representatives forward the letter to him (Dr. S. J. Walkley), Congress Hall Hotel, Washington, D. C., that he may endeavor to learn the cause of the lack of interest, and endeavor to overcome it. The cause is a good one, lend it your earnest support until it becomes an accomplishment.

Dr. D. Arthur Hughes Goes to Fort Worth, Texas. —Our esteemed collaborator, Dr. D. Arthur Hughes, received telegraphic instructions on May 2 to proceed immediately to Forth Worth for temporary duty as veterinary inspector of meats in the Office of the Depot Quartermaster, Major Alexander M. Davis, of the Quartermaster Corps of the Army. Dr. Hughes' order reads that he is to return to Chicago at the expiration of his duty in Fort Worth.

The opening of a depot at this point is a new army move incident to the Mexican crisis, the object being to purchase subsistence supplies in enormous quantities at Fort Worth, especially fresh beef, for the field armies in eastern and northern Mexico in case of war, and for the militia and volunteer forces which will be probably mobilized in Texas at some points, possibly at Fort Worth, Dallas, Houston, San Antonio or nearer the border. If hostilities break out it is expected that Fort Worth will be the big meat supply depot, as it is the largest packing house centre nearest the border, and it is of the highest importance that that depot be established and thoroughly organized early. Consequently that office is engaged in gathering data on available stock for immediate use, the maximum capacity of business houses there and in neighboring cities to meet the expected draft on them for subsistence supplies. Preparation is being made for possible exigencies so that the Quartermaster Corps may be ready to furnish supplies in enormous quantities and with the utmost speed in case of active warfare with Mexico. The army wants no repetition of that unpreparedness and the terrible losses which occurred at Chickamauga Park and elsewhere during the Spanish-American War.

Dr. and Mrs. A. T. Ayres, Oklahoma City, announce the birth of "Georgie," May 18, 1914, weight 7½ pounds. Georgie is welcomed into our circle of friends, and her parents are tendered the congratulations of the profession through the Review.

ORIGINAL ARTICLES.

THE PRODUCTION OF ARTIFICIAL IMMUNITY AGAINST TUBERCULOSIS IN DOMESTIC ANIMALS.*

By S. H. Gilliland, V.M.D., M.D., Former State Veterinarian of Pennsylvania, Late Director Pennsylvania State Department of Health Laboratories, Marietta, Pa.

The experiments we are about to report extend over a period from 1900 to the present time. More than four hundred cattle (cows, yearlings and calves), hogs, rabbits and guinea pigs were used to obtain the information here presented.

We believe a concise résumé of these experiments of the State Livestock Sanitary Board of Pennsylvania will be more interesting and instructive than an attempt to review the voluminous work others have done on this subject and thereby attempt to draw comparisons. This will be done in the complete publication of the work in the bulletin form. However, mention might be made of some of the early work done along this line. In 1889 Samuel G. Dixon published in the *Medical News,* October 19, p. 435, "Possibility of Establishing Tolerance for the Tubercle Bacillus," in which he obtained a resistance against tuberculosis in rabbits by the injection of involuted forms of tubercle bacilli. In 1892 and 1893 Trudeau found that by subcutaneous inoculation of living cultures of avian tubercle bacilli he was able to increase the resistance of a rabbit to infection of living virulent mammalian cultures. He also succeeded in immunizing rabbits to such an extent that when inoculated in the eye with mammalian cultures the first inflammatory reaction gradually disappeared, leaving the eye in a normal condition, while similar inoculations in control animals led to the destruction of the eye. In 1894 E. A. de Schweinitz, of the United States Bureau of

* Read before the Pennsylvania State Veterinary Medical Association, Philadelphia, March, 1914.

From the Laboratory of the State Livestock Sanitary Board of Pennsylvania.

Animal Industry, reported in the *Medical News* some experiments made upon guinea pigs in which these animals were inoculated with tubercle bacilli of the human type cultivated upon glycerine beef broth for about twenty generations. These animals with controls were afterwards injected with tuberculous material from a cow. The treated guinea pigs remained free from tuberculosis, while the check animals inoculated with the same tuberculous material from the cow died of tuberculosis within seven weeks.

In September, 1910, Schroeder & Mohler, of the United States Bureau of Animal Industry published a report upon the Immunization of Cattle against Tuberculosis, giving the results obtained by them with the Von Behring method, the Heyman method and the Pearson method. The latter is the one suggested by the late Dr. Leonard Pearson in connection with the experiments that are here reported. They found in a comparison of the methods that 88 8/10 per cent. of the animals immunized by the Pearson method were successfully protected for approximately two years, while only 66 2/3 per cent. were successfully protected by the Von Behring method. The Heyman and the subcutaneous methods, according to their experiments, gave a much lower percentage of animals successfully protected. Von Behring announced December 12, 1901, that he was engaged in studying the immunization of cattle against tuberculosis, and detailed experiments upon several cattle treated with injections of tuberculin and cultures of tubercle bacilli of varying degrees of virulence and from several sources, and afterwards inoculating the animals with tuberculous material or cultures of proven virulence. All of the protected cattle except one were still living when this announcement was made.

Systematic efforts to immunize against tuberculosis may be said to have commenced earnestly with the discovery of tuberculin by Koch in 1890. Since this date there have been many investigators throughout the world who have reported the results of their researches in the production of immunity in tuber-

culosis, and regret that time does not permit the presentation to you of abstracts of the results of these patient investigators.

In 1902 Pearson & Gilliland* published accounts of some experiments made by them upon the immunization of cattle against tuberculosis by the use of culture of living tubercle bacilli of the human type.

It might be well at this point to describe the culture used to produce the immunity, as it was used in many of the later experiments. It is known throughout all the experiments as Culture M, and was obtained from the sputum of a young adult that had a constant cough, though no involvement of the lungs could be detected on physical examination. Smears made for microscopic examination from the specimen of sputum showed an extraordinarily large number of tubercle bacilli. The organism was obtained in pure cultures on dogs' blood serum by the passage through guinea pigs on October 15, 1899. Microscopic examination of the bacilli revealed them to be irregular in size and shape. Many were curved and some S shaped. Beading not marked; stain deeply and fairly evenly. This culture at the time it was isolated and for some years afterwards, was found to be virulent for guinea pigs in ordinary doses, but not virulent for rabbits, goats or calves.

Preparation of the Vaccine.—The method of preparation of the vaccine used throughout all the experiments was practically the same except where otherwise noted. A quantity of tubercle bacilli from a three to four-week old glycerine bouillon culture was taken, the excess of moisture removed by either blotting between layers of sterile filter paper or drying over calcium chloride in a dessicator for a short time and then rubbed in a mortar or ground in a flask with bronze balls. No effort was made to get the bacilli perfectly dry owing to the danger to the operator in grinding them and making the suspension. It was not the object to break up the bodies of the bacilli, but to separate them so that a homogenous suspension could be obtained. During the process of rubbing or grinding small quantities of

* Philadelphia Medical Journal, Nov. 29, 1902.

normal saline solution were added from time to time. The suspension was allowed to stand in a cylindrical receptacle until all clumps of bacilli had settled to the bottom, and then the supernatant, homogeneous suspension of tubercle bacilli was decanted off. This suspension was further diluted with normal saline solution until its opacity was equal to a 24-hour old bouillon culture of typhoid bacilli. This method of measuring the dose suggested itself from the work of other investigators. For a comparison with the work of others the amount by weight of dried bacilli per cc. of standard suspension was determined. This was done by taking a large quantity of killed tubercle bacilli and dessicating over calcium chloride until perfectly dry. These were then rubbed in a mortar and suspended in normal salt solution until the opacity was the same as the standard vaccine. By this method it was determined that 1 cc. of the standard suspension of vaccine contained the equivalent of 0.0013 gram (1.3 milligrams) of tubercle bacilli. This equivalent was determined with a very large quantity of dried tubercle bacilli, and the fraction of error for 1 cc. was infinitesimal.

In some of the later experiments the vaccine was prepared by weighing the bacilli after the excess of moisture had been removed by dessication. These suspensions were prepared so that one cc. represented 1 milligram (0.001 gram) of dried tubercle bacilli. This was believed to be more accurate than the opacity method.

The vaccine was generally injected within a few hours, or at the most within a few days from the time it was prepared. It was found that some lots of vaccine had a tendency to clump if allowed to stand for any length of time. If the vaccine was not used within a few hours after its preparation it was kept in an ice chest and microscope and cultural examinations made to determine its sterility.

Method of Vaccination.—In all cases except where otherwise noted the vaccine was injected into the jugular vein. The animal was either confined in a stanchion or cast, depending upon its size. The hair over the jugular vein was clipped with

scissors and afterwards the skin was washed with a solution of carbolic acid or creolin. The jugular vein was filled by compressing the thumb at the lower portion of the neck. The needle was then inserted into the vein and a few drops of blood were allowed to pass through the needle to insure the same being open. The syringe was then attached to the needle and the required dose injected directly into the blood stream. A syringe with a slip needle is best adapted for this work.

The first experiment was started November 19, 1900, with the object in view of determining whether calves can be infected, to what extent and in what time, by large and repeated injections of tubercle bacilli of the human type. This experiment led us to believe that cattle were refractory to enormous quantities of tubercle bacilli from certain human sources, and further, that such injections were capable of greatly increasing the normal resistance of cattle to virulent tubercle bacilli of bovine origin.

About the same time another experiment was carried out in which four yearling calves were used, two of which received seven vaccinations between March 24th and June 2d. The other two animals were kept as controls. Approximately eight weeks following the date of the last vaccination of the two animals, they were injected intratracheally along with their controls with 10 cc. of a standard suspension of a bovine culture of tubercle bacilli known to be highly virulent for cattle. The four animals were killed about three months from the date of intratracheal infection. Two vaccinated animals contained no distinct lesions of tuberculosis, while the two controls contained widely distributed active progressive lesions. The detailed results of these two experiments were published by the late Dr. Leonard Pearson and the writer in the *Journal of Comparative Medicine and Veterinary Archives* of November, 1902, and at that time we concluded:

1. That after repeated intravenous injections of cultures of tubercle bacilli from human sputum the resistance of young cattle to virulent tubercle bacilli of bovine origin may be in-

creased to such an extent that they are not injured by inoculation with quantities of such cultures that are capable of causing death or extensive infection of cattle not similarly protected.

2. That by intravenous injection much larger quantities of culture of human sputum tubercle bacilli than are necessary to confer a high degree of resistance, or immunity, upon the vaccinated animal may be administered without danger to that animal.

Since that time the question immunization of cattle against tuberculosis has been a constant study at the laboratory and experimental farm of the State Livestock Sanitary Board. The following experiments give the results of the work having a direct bearing upon the application of a practical method of immunizing animals against tuberculosis. There were other experiments conducted to obtain knowledge of the virulence of cultures, the best method of administering the vaccine, etc., that are not here recorded.

Experiment 115a.

This experiment was started in November, 1902, with the object of further determining the immunizing value of intravenous injections of cultures of tubercle bacilli of human origin, and also to ascertain the dosage and the method best adapted to achieve this purpose.

There were fourteen yearling heifers and steers in this experiment, nine of which were vaccinated by various methods and five were kept as controls. All of the animals were determined to be free from tuberculosis by the application of the tuberculin test. Animals No. 45183, a brindle steer, and No. 45184, a black heifer, were given ten intravenous vaccinations between November 27, 1902, and March 2, 1903. The amount of vaccine administered at each vaccination ranged from 10 cc. to 30 cc. of a standard suspension of culture M. The interval between vaccinations varying from 8 to 14 days.

Following the vaccination of the black heifer, No. 45184, on January 10th, she was noticed to be much depressed, the respirations were greatly increased, labored and painful.

These animals were kept during the period of vaccination in a temporary stable in connection with the Veterinary Hospital of the University of Pennsylvania.

On June 16, 1902, 3½ months after the last vaccination, they were placed with their controls in a pasture with a number of tubercular cows. They were removed from this pasture five months later and stabled with cows with advanced tuberculosis until killed.

The brindle steer, No. 45183, was killed September 7, 1904, one and one-half years from the time the last vaccine was administered. On post-mortem examination this animal showed general progressive tuberculosis of the pleura, lungs, mediastinal and bronchial lymphatic glands, omentum, peritoneum, liver, spleen, as well as the post-pharyngeal and mesenteric Lymphatic glands. A striking feature in this case was the uniform distribution of the tubercular areas in the lungs. Evidently the tubercle bacilli were carried there by the circulation.

The black heifer, No. 45184, which received the same treatment as the brindle steer, No. 45183, was killed at the same time and a very careful examination of all the organs, glands and membranes failed to detect any evidence of tuberculosis except in the posterior mediastinal lymph gland, which contained three caseous, well encapsulated tubercles the size of a pea. The tuberculin test of this animal prior to entering the experiment shows that she had an after temperature of 103.2 F. though she was considered at the time to be free from tuberculosis.

It is the belief of the writer that the brindle steer, No. 45183, had a low natural resistance and became infected from the too frequent and too large doses of vaccine. This conclusion is based upon the character and distribution of the lesions in the lungs and other organs. The pathologic picture was one of a mild progressive generalized tuberculosis.

In the case of the black heifer, No. 45184, she either contained a small lesion of tuberculosis before entering the experiment or else the immunity conferred by the vaccine was lost before she was killed, one and one-half years following the last

vaccination. Inoculations of guinea pigs from the lesion found in the mediastinal gland of this animal, proved that the bacilli had a much greater degree of virulence than the Culture used for the preparation of the vaccine.

Two more animals, a spotted bull, No. 45185, and a brown and white heifer, No. 16025, were vaccinated three times with a standard suspension of tubercle bacilli, twice with culture M and once with culture U, as follows:

Bull No. 45185.

Nov. 27 Vaccinated in Jugular Vein 10 c.c. Standard Suspension Culture M.
Dec. 23 Vaccinated in Jugular Vein 20 c.c. Standard Suspension Culture M.
1903
Jan. 24 Vaccinated in Jugular Vein 5 c.c. Standard Suspension Culture U.

Heifer No. 16025.

1903
Jan. 31 Vaccinated in Jugular Vein 10 c.c. Standard Suspension Culture M.
Mar. 21 Vaccinated in Jugular Vein 20 c.c. Standard Suspension Culture M.
Apr. 10 Vaccinated in Jugular Vein 5 c.c. Standard Suspension Culture U.

It will be noticed that the vaccine for the last vaccination of these animals was prepared from culture U. This culture was isolated by Dr. M. P. Ravenel from the mesenteric gland of a child in December, 1901. It was found to be highly virulent for guinea pigs, and a six weeks' old calf inoculated intravenously with it on March 4, 1902, was killed in a moribund condition six weeks later and showed extensive tuberculosis of the lungs, some of the nodules having gone on to the caseation stage. The lymph glands were enlarged and microscopic scrapings from the same revealed enormous numbers of tubercle bacilli. This culture was used for the third vaccination with the idea that the first two vaccinations with culture M would give sufficient immunity to protect against infection from culture U and a higher resulting immunity would thereby be obtained.

These animals were exposed to natural infection by association with tubercular cows in the same manner as the controls. The exposure with tubercular cows started on June 16, 1903.

The spotted bull, No. 45185, died of tympanites on September 4, 1904, one year and eight and one-half months following

the last vaccination. On autopsy the mediastinal lymphatic glands were enlarged and contained caseous material, surrounded by a thick fibrous wall. The posterior mediastinal gland was 4 inches by 6 inches, which forced the oesophagus downward and may explain the tympanites.

The brown and white heifer was killed September 7, 1904, one year and five months following the last vaccination. Autopsy revealed two questionable lesions in the left lung. Three caseo-calcareous nodules in mediastinal lymph glands. Three caseous areas ⅛ inch to ⅓ inch found in mesenteric lymph glands. Post-pharyngeal lymphatic glands enlarged and caseous.

The lesions in both of these animals were well circumscribed and walled off by fibrous tissue. From this and later knowledge obtained it seems more probable to the writer that the vaccination with culture U following so close upon the previous vaccination with culture M was the cause of infection rather than from the association with the tubercular cows.

The fifth vaccinated animal of this experiment received on November 27, 1902, a single vaccination of 10 cc. of culture M. On January 20, 1903, this animal died of intestinal trouble and must be excluded from the experiment.

The sixth and seventh vaccinated animals, a red bull, No. 45191, and a red steer, No. 45192, received between November 27, 1902, and January 24, 1903, three intravenous injections of culture M and two intravenous vaccinations of culture U, as follows:

1902
Nov. 27 Vaccinated in Jugular Vein 10 c.c. Standard Suspension M.
Dec. 4 Vaccinated in Jugular Vein 15 c.c. Standard Suspension M.
Dec. 15 Vaccinated in Jugular Vein 20 c.c. Standard Suspension M.

1903
Jan. 10 Vaccinated in Jugular Vein 5 c.c. Standard Suspension U.
Jan. 24 Vaccinated in Jugular Vein 5 c.c. Standard Suspension U.

These animals were exposed to natural infection by association with tubercular cows in the same manner as the other animals of this experiment.

The red bull, No. 45191, was killed April 30, 1904, one year and three months following the last vaccination. A careful

autopsy failed to reveal any lesion of tuberculosis. All organs, glands, etc., normal.

The red steer, No. 45192, was killed April 26, 1904, one year and three months following the last vaccination. Both front knees of this animal had been greatly enlarged for three months and extremely painful. The capsules were enlarged and filled with a pink gelatinous material. Between the two rows of carpal bones the cartilages were eroded. On further autopsy there was found to be a moderate number of tuberculous deposits in the lungs about ⅛ to ¼ inch in diameter. The bronchial and mediastinal lymphatic glands were enlarged and contained dense calcareous deposits. The viscera, pleura, diaphragm and peritoneum contain a few reddish growths. Microscopic examination of these deposits and growths shows no tubercle bacilli. However, animals inoculated from the lesions developed tuberculosis. A most striking feature was the sharpness with which the diseased areas were marked off from the normal tissue.

The eighth vaccinated animal, a red bull calf, No. 16066, received five intravenous vaccinations of culture M between May 16 and August 5, 1903, the dose gradually increasing from 1 cc. on the first injection to 10 cc. on the last injection.

On July 9, 1903, it was exposed to natural infection of the same degree as the other animals of the experiment.

It was killed on September 7, 1904, after 14 months of exposure to natural infection. A careful post-mortem examination revealed no evidence of tuberculosis except a calcified nodule 1/3 inch in diameter in posterior lobe of left lung. Guinea pigs inoculated from this lesion developed tuberculosis in six weeks.

The ninth and last vaccinated animal of this experiment, red steer No. 20027, received five intravenous vaccinations of culture U between December 1, 1903, and July 14, 1904. The dose was 10 cc. at each vaccination except the fourth, at which time it was increased to 15 cc.

On July 5, 1904, previous to the last vaccination, this animal was removed from the temporary barn in Philadelphia to the Experimental Farm in Delaware County and exposed to natural

infection by association with tubercular cows. This animal steadily gained in weight and remained in good condition. It was killed on December 30, 1905, one year and a half of constant exposure to infection. A very careful examination of all the organs, glands and membranes failed to show any evidence of tuberculosis except in left post-pharyngeal gland there was a cheesy focus one inch in diameter. The lesion did not have the appearance of an active one.

The five control animals for this experiment, red steer No. 45186; black bull, No. 45188; black and brown heifer, No. 45168; red bull, No. 45189; and red heifer, No. 45190, were kept under the same conditions as the vaccinated animals and exposed with them to the same degree of natural infection.

Post mortem of controls as follows:

Animal No. 45186. Killed April 30, 1904—

Tuberculosis of lungs, t t. Pleura, t t. Post-pharyngeal glands, t t. Bronchial glands, t t. Mediastinal glands, t t t. Pericardium, t t t. All the lesions appear to be active and progressive.

Animal No. 45188. Killed September 7, 1904—

Active tuberculosis found in left lung, t t. Bronchial glands, t t t. Mediastinal glands, t t t.

Animal No. 45168. Killed September 7, 1904—

Tubercular lesions found lungs, t t. Bronchial glands, t t t t. Mediastinal glands, t t t t.

Animal No. 45189. Killed April 30, 1904—

Lesions of tuberculosis in lungs, t t t t t. Pleura, t t. Pericardium, t t. Cervical lymphatic glands, t t. Bronchial glands, t t t t. Mediastinal glands, t t t t t. Lymphatic glands anterior to heart and below trachea, t t. Liver, t t. Portal lymphatic gland, t t. Omentum, t t. Diaphragm, t t. In this animal the disease is rather widely distributed and of an active character.

Animal No. 45190. Killed September 7, 1904—

Lesions of tuberculosis found in lungs, t t t. Bronchial glands, t t t. Mediastinal glands, t t t t. Liver, t t t t. Diaphragm, t. Mesenteric glands, t t.

NOTE.—The extent of the disease is indicated by t signs. One t sign means very slightly involved, while six t t t t t t signs means extensive involvement of the organ, gland or tissue named.

Experiment 115d.

This experiment was started with the object of determining the size of the dose, the number of doses and the best interval between the injections of tuberculosis vaccine to produce a serviceable degree of immunity in calves against the disease by natural infection. Thirty calves, ranging in age from 10 to 12 weeks, were selected for this purpose; twenty to be vaccinated, and ten to be used as controls. These animals were purchased in Somerset County and were received in Philadelphia during a warm spell of weather in July, 1903. They were given a tuberculin test, which was only partially satisfactory, owing to the age and condition of the animals. However, they were selected from apparently healthy herds.

These calves were placed on a pasture in Montgomery County, where they contracted lung worms (Strongylus Micrurus) during the period of vaccination, and twelve of the thirty died, leaving twelve upon which vaccinations had been started, and six controls. The animals to be vaccinated were divided into four lots.

Lot I—

Roan heifer, No. 16081; red and white heifer, No. 16087; and fawn heifer, No. 20002, were given four intravenous vaccinations of a standard suspension of culture M between August 5, 1903, and January 6, 1904, the dosage increasing from 5 cc. to 15 cc.

Lot II—

Consisted of two animals: White heifer No. 16089; and brown and black bull, No. 16092. They received, between August 5, 1905, and January 6, 1904, five vaccinations of a standard suspension of culture M, the dosage increasing from 4 cc. to 18 cc.

Lot III—

Consisted of three animals: Red steer, No. 16080; brindle bull, No. 16093; and red bull, No. 20005. They were given in all five vaccinations of a standard suspension of culture M. The

dosage was somewhat larger than for Lot II, the first dose being 5 cc. and the last dose 20 cc.

Lot IV—

Consisted of four animals: Red bull, No. 16079; red heifer, No. 16084; brown and black heifer, No. 16095; and spotted bull, No. 16091. These animals received in all six vaccinations—five of a standard suspension of culture M and one of a standard suspension of culture U—between August 5, 1903, and March 18, 1904. The dosage was 5 cc., 10 cc., 15 cc., 15 cc., 20 cc. and 10 cc.

The animals of these four lots with their controls were exposed during the period of vaccination to a moderate degree of infection by association in a pasture with tuberculous cows. Following the vaccinations they were all constantly exposed to infection by being stabled with cows with generalized tuberculosis.

Results of Autopsies—Lot I—

Animal No. 16081. Killed December 30, 1904. All organs normal.

Animal No. 16087. Killed April 8, 1905. All organs normal, except pea sized, well encapsulated nodule in left post pharyngeal gland, with all the appearances of an inactive lesion.

Animal No. 20002. Killed April 8, 1905. No evidences of tuberculosis could be found.

Lot II—

Animal No. 16089. Killed December 30, 1904. No tuberculosis.

Animal No. 16092. Killed April 8, 1905. No tuberculosis.

Lot III—

Animal No. 16080. Killed September 15, 1904. No tuberculosis.

Animal No. 16093. Killed December 30, 1904. No tuberculosis.

Animal No. 20005. Killed April 8, 1905. No evidences of tuberculosis found except in left pharyngeal gland there is a small nodule ⅛ inch in diameter surrounded by a gray capsule. Guinea pigs inoculated from this nodule developed tuberculosis.

Lot IV—

Animal No. 16079. Killed September 15, 1904. No tuberculosis. Small sections in the lungs show chronic bronchial pneumonia.

Animal No. 16084. Killed December 30, 1904. No tuberculosis. A small greenish nodule found in one of the lungs. Upon histological examination it resembled a dense collection of lymphoid tissue rather than a tubercular process.

Animal No. 16095. Killed April 8, 1905. No tuberculosis.

Animal No. 16091. Killed April 8, 1905. No tuberculosis.

Controls—

Animal No. 16082. Killed September 17, 1904. Early active lesions of tuberculosis were found in the lungs, t t. Post-pharyngeal glands, t t. Mesenteric glands, t t t.

Animal No. 20007. Killed December 30, 1904. Active tuberculosis of lungs, t t t. Bronchial glands, t t t t. Mediastinal glands, t t t. Liver, t.

Animal No. 20008. Killed December 30, 1904. The lungs contain one small area of suspected tuberculosis which was not proven by animal inoculation. Tuberculosis found in the bronchial glands, t t; and mediastinal glands, t t t.

Animal No. 16086. Killed April 8, 1905. Tuberculosis of the post-pharyngeal glands, t t t; and Omentum. Lungs normal.

Animal No. 20003. Killed April 8, 1905. Active tuberculous processes found in the post-pharyngeal glands, t t t; and mediastinal glands. No tuberculosis of lungs.

Animal No. 16090. Died February 11, 1905. Was in very poor condition for two months. Extensive generalized tuberculosis of lungs, t t t t t t. Bronchial glands, t t t t. Mediastinal, t t t t. Pericardium, t t. Pleura, t t t t t. Diaphragm, t t t. Post-pharyngeal glands, t t t. Portal lymphatic gland, t t. Omentum, t t t.

The average length of exposure to infection for the vaccinated animals was 1 year, 172 days; while for the controls it was 1 year, 166 days. In brief, we find only two of the 12 vaccinated animals showed any evidence of tuberculosis, and in

those the lesions were very small and inactive, while all the controls presented lesions of tuberculosis distributed throughout the body. One of the controls developed tuberculosis to such an extent that it died in 1 year and 190 days, showing that the degree of exposure to infection was severe.

REFERENCES.

To Dr. Leonard Pearson much credit is due for the original plans of these experiments, and only through his untiring efforts were means obtained from the Legislature by which it was possible to pursue this important line of investigation. Difficulties arose in the progress of this work that seemed insurmountable, and through the wise counsel, kindly suggestions, and encouraging words of this one man the parties in direct charge of the work were stimulated to exert their best efforts.

The writer is deeply conscious of the fact that these experiments could have been presented in a more concise, a more intelligent and a more able manner by the one whose untimely death was a severe blow to the entire veterinary profession. These investigations were originally planned and started by Dr. Leonard Pearson and the writer, who later secured the assistance of a number of men, and to these men I desire to express my thanks:

To Dr. M. P. Ravenel for the isolation of most of the cultures used in the preparation of the vaccine.

To Dr. C. Y. White and Dr. John Reichel for the histological examinations.

To Dr. E. S. Deubler and Dr. John Reichel for the preparation of the vaccine for the latter experiments and general bacteriological work.

To Dr. E. S. Deubler credit is due for many of the autopsies, the vaccinations of the animals and the supervision and management of the Experimental Farm following 1907.

For general assistance during various phases of this work we are indebted to Dr. H. C. Campbell, Dr. E. P. Althouse, Dr. E. Barnett and Dr. I. B. Powell.

(*To be concluded in next issue.*)

ALUMNI DINNER AT NEW YORK ATHLETIC CLUB JUNE 10, 1914.—The pleasant memory that lingers with those alumni of New York University who attended the dinner of the New York American Veterinary College at the New York Athletic Club a year ago will make them very receptive to the announcement that again this year they are to dine amid the surroundings that so delighted the artistic temperament of our good friend Howard from Boston, as to make it impossible for him to restrain the flow of poetic sentiments that characterized his after-dinner remarks. And while the symptoms were not so *speakingly* pronounced with everyone present, all were similarly affected, and, we trust, have told their brother alumni about it, so that the numbers will be even greater on this second occasion. The veterinary alumni association meeting, as announced in the May REVIEW will be held in the middle of the day at the old veterinary building at 141 West 54th street, so that the members may attend the commencement exercises at University Heights in the afternoon. The excellent music and splendid addresses are features that stand out prominently at this annual function.

THE TISSUE FOOD.*

By John A. McLaughlin, D.V.S., New York, N. Y.

When I read my last paper, *"The Tissue Medium,"* I earnestly requested a full discussion and criticism of the thought I had advanced. I wished to hear from my fellow practitioners its strength or its weakness. Evidently I did not make my view-point clear, for what I desired most to hear discussed has been passed by in silence. I accept all blame for this, but in excuse will say that I had to crowd a vast deal in one small paper.

I was, and am, attempting to study physiology in the light of anatomy, and anatomy, that is structural anatomy, in the light of physiology. Knowing the end product of food, that is its physiological ending, also its anatomical ending, knowing its source as well as its destination, I attempted to study the structural anatomy of the parts involved by following it from its source to its destination. One of my critics insists that any theory to be of value must present original facts, replying to which I will state that I accept the facts presented in any text-book on anatomy or physiology. If I am in error in one essential fact, then is my theory wrong.

The following may present my view-point more clearly: If the different parts of a machine were found separated, and their purpose unknown, both its construction and its purpose would be disclosed as soon as it performed a recognized feat. If the separated parts were those of a flying machine, it would be impossible to tell it was a flying machine (without previous knowledge) until the parts were put together correctly, nor would it be known that the parts were put together correctly until it flew, when both its purpose and its correct structure would be known. When we see a printed paper passing from a multiple press, we are assured that the parts of that machine are put to-

* Presented at the February meeting of the Veterinary Medical Association of New York City.

gether correctly, but with the same assurance we can affirm that the parts are put together on correct mechanical principles. To think otherwise would be absurd.

So I was, and am, attempting the study of the organism, or rather a part of the organism, its anatomy and physiology as we would a man-made machine. To do this effectively, I sought a substance that was possessed of physical properties whose upbuild or synthesis could be followed from start to finish, just as we might follow a product of some man-made device, from the raw material to the finished article. The tissue medium I considered was such a substance; it is an end product (by an end product I mean the last of more than one product in which the intermediate products are but stepping stones to the finished article). (2) We know from whence it comes and to where it goes and the purpose it is intended to serve. (3) It comes from the food the organism partakes of and is intended as food for the tissues and its destination must be the tissues. (4) We know the structural anatomy and histology of the parts, and as sure as the multiple press is built on recognized mechanical principles so must the organism (and the parts which produce the tissue medium) be constructed on the same mechanical principles.

In one respect, however, you have accorded me enlightenment. I was not as clear as I should have been on the subject of plasma; when I said if the tissue medium was not the plasma itself it existed in the substance of plasma, I was, I admit, rather vague, for I had been speaking of both as identical substances. That I might be more clear in this paper, I have entitled it *The Tissue Food*, between which and the tissue medium and the plasma there *is* a difference. On the term plasma I have been a little hazy also. I have used it to indicate the tissue medium—that fluid which bathes the tissues; our text-books term it lymph; I think both terms could be substituted by a better one, for plasma implies that it is found only in the blood, lymph that it is found only in the lymphatic vessels; I propose to name it *tissue plasma*.

By *tissue food* I mean the substance, simple or compound, by which the tissues actually live, by the tissue medium I mean the

fluid they live *in*. They live *by* tissue food, they live *in* tissue plasma; tissue plasma is their material world as the outside material world is that of the organism; it is tissue food I am studying, not plasma, and it is the anatomical construction of the parts which produce and transport it to its destination I am attempting to interpret, and which when interpreted correctly will be found, must be found, to be constructed in accord with mechanical principles.

In my last paper I studied the route of the tissue food or, as I then termed it, the tissue medium (plasma) from its source to its destination, and described the structural arrangement of the parts in which it was produced and transported from its source to the tissues. That description disclosed a route that was constructed (or, I contended, was constructed) on approved mechanical principles. In this paper I propose to study the *tissue food,* by reversing the order I then followed and beginning at the tissues, retrace its course to its source.

The first step backward brings us into the circulatory apparatus. The circulatory apparatus and the tissues are anatomically distinct, so this first step backward actually transports us from one part of the organism to another, a most remarkable feat of transportation. This remarkable feat is accomplished by passing directly *through the walls of the capillaries.* It is essential to my purpose to discover the import of this physiological phenomenon. What we must decide is whether it is an incidental occurrence, as absorption, or whether it is a *genuine* physiological function.

As I contend that all physiological phenomena must have an anatomical explanation or a histological one, it is essential to my theory that this particular phenomenon must have an explanation in the histology of the capillaries, and I consider the assumption well founded that the capillaries are histologically, physiologically and regionally adapted to perform the work they do, and their function is the result of a special design on the part of the organism. Nor is this function a simple one, but holds a very important place in physiology; for this act of passing through the capillaries is not merely one of passage, but one of filtering, and the

filtering is as important a physiological function as is the act of transportation. Transportation is essential, for if the tissue food should remain in the circulatory apparatus, it could not be of any benefit to the tissues, but filtering is also essential to prevent substances that are inimical to the tissues coming in contact with them. To sum up the functions of the capillaries, they filter the good from the bad, permitting the good to pass their walls, retaining the bad within their walls. Now we know what passes through and we know just what remains in the capillaries, plasma passes through, corpuscles remain in the circulatory apparatus. I infer from this that plasma represents the good and the corpuscles represent the bad. I infer also that the tissue food exists in the plasma and not in the corpuscles.

With these remarks regarding the physiology of the capillaries, we can continue retracing the route of the tissue food with proper intelligence, for knowing that plasma and tissue food are found together, we can disregard the corpuscles even though they dominate the blood so thoroughly and follow the plasma, assured that where plasma is there also is the tissue food.

The second step backward carries us to the lungs. You may ask: Why so far? To which question I must answer that the tissue food is a synthetic product and only cells are capable of a synthetic power, and between the capillaries and the lungs there are no cells. These cells, however, or oxygen, I contended in my last paper had no part in the upbuild of the tissue food. I was very severely criticised for this statement, but my critic was alluding to plasma, which I believe holds oxygen within its substance. This is where, in my previous paper, I made myself ambiguous and used the term plasma and tissue food as meaning the same substance.

It might be well to explain here how oxygen becomes part of plasma. This is my explanation: The corpuscles carry oxygen, in the capillaries they give up this oxygen; the inference is that oxygen enters the plasma in a pure state, but my explanation is that oxidized products when sufficiently prepared for elimination pass through the capillaries to be excreted. In my last paper

I stated that oxygen was essential to elimination, and I might almost add that that constituted its entire function, and only after being thoroughly oxidized can the impurities of the blood be eliminated, but no elimination could possibly take place in the circulatory apparatus, so oxidized substances constituted the oxygen found in the plasma, and also represented its impurities.

From the lungs to the next place where a synthetic process is possible, we must leave the circulatory apparatus entirely. Before leaving, however, I might be asked if the blood has no effect on the tissue food; to which I answer, *no,* the tissue food once formed is altered only by the tissues themselves; when the tissues partake of this prepared diet, the tissue food is changed into tissue substance, tissue by-products and waste.

In the circulatory apparatus there is but one organ that has a direct influence on the tissue food, that is the heart, and the influence of this wonderful organ is confined to transporting it to the tissues. I argue that the tissue food is formed *before* it comes under this influence. The function of the heart is to produce the circulation, without the heart the blood would remain motionless and the tissue food would never reach the tissues; it is the dynamo, the power within the route we are studying. Let us see what this power encompasses.

The heart exists for the benefit of the tissues; every organ exists for the same purpose; it produces the circulation, for otherwise the tissues would starve, the circulation transports the tissue food to the tissues, it is a case where the mountain actually goes to Mahomet, and the heart is the power that moves the mountain, or, if you will, he is the shepherd of his flock of tissues, but instead of leading his flock to the pasture, he sends the pasture to his flock. The organism is capable of movement, and can search for its food, but not so with the tissues, they remain stationary. The relation between the organism and its world and the relation between the tissues and their world (plasma) is reversed, in the former the organism moves; in the latter, the world moves.

According to our text-books the function of the circulation is

to carry, or rather force, oxygen to the tissues. The explanation is that the blood enters the lungs to *absorb* oxygen, and the heart propels this oxygen-charged blood to the tissues, where it is *absorbed* by the tissues. Instead of the blood absorbing oxygen from the atmospheric air, I infer that the lungs are anatomically and histologically designed to secrete oxygen and transport it to the blood vessels which constitute their ducts. It is a parallel function to the lacteals, which secrete tissue food from the food and transport it to their blood *cul-de-sacs* and that of the various glands (the mammary, for instance), which secrete milk from the plasma and transport it to the lacteal ducts. I cannot understand the logic that gives such varied methods of procedure to organs whose difference is only in their structure, but whose purpose is the same, but I can understand the logic that infers that this difference in structure is to meet the difference in environment; nor can I understand the further argument that ascribes absorption to the lacteals, absorption *in* the lungs, absorption to the tissues, secretion to the mammary glands and excretion to the kidneys. It would not be a perfect man-made machine if built in such manner.

Now we will study the route by which the tissue food enters the alimentary lymphatics and leaves the circulatory apparatus (or rather enters it, for we are retracing our course) and the structural arrangement of the parts which connect these two wonderful apparatuses. The connection is made, as we know, by the *thoracic duct* and *the great lymphatic vein,* and there can be no question that these two vessels make a remarkably simple and complete connection. To describe the route, however, from this point onward, or rather backward, I find very difficult; this is because the two ducts or vessels divide into three routes, each route following a different course. The one going to the alimentary canal is undoubtedly the one followed by the tissue food, and as it is our present purpose to study the backward route of the tissue food, this is the one we will follow. Having arrived at the alimentary canal, we will survey the route I have mapped out and then study the structural arrangement of the two apparatuses

and the histology and physiology of the lacteals and the mesenteric veins.

The route is as follows: Beginning in the *lacteals* and passing to the *receptaculum chyli,* from the *receptaculum chyli* to the *thoracic duct,* from the *thoracic duct* to the *circulatory apparatus,* which it enters near the heart, the *right heart,* to be exact, from the *right heart* to the *lungs,* from the *lungs* to the *left heart,* from the *left heart* through *all the arteries, but not into the veins,* from the arteries into the *arterial capillaries, but not into the venous capillaries,* through the walls of the *arterial capillaries* to the *intercellular spaces,* from the *intercellular spaces* into the *open orifices of the* (Note—There seems to be a question of late as to whether the systemic lymphatic vessels are open or closed) *systemic lymphatic vessels.* Now I must pause here for a moment to say that the systemic lymphatic vessels are but the continuation of those of the alimentary lymphatics, that although separated anatomically by the circulatory apparatus they are nevertheless connected physiologically. As we have already noted, the blood has no effect on the tissue food, or upon the substances from which the tissue food is manufactured, so that when these latter substances pass with the tissue plasma into the intercellular paces and from these spaces into the systemic lymphatics the physiological connection is complete. As we have also noted, the systemic lymphatics are divided into two branches, one carrying tissue plasma and tissue food and lymphatic corpuscles (which latter it collects during its progress to the great lymphatic vein) from the right anterior limb, the right moiety of the head and neck and right thorax to the *great lymphatic vein.* During its course it does not meet the alimentary lymphatics, but the other branch, which transports lymph from the rest of the system, meets the alimentary lymphatics at the *receptaculum chyli,* and its contents and that of the alimentary lymphatics pass through the *thoracic duct* as one fluid, and as such empties into the circulatory apparatus. The thoracic duct, however, anastomoses with the great lymphatic vein at their entrance to the veins, which anatomical fact impresses me that the fluids when mixed are performing a physiological feat.

Now to study the structural arrangement connecting the alimentary lymphatics and the alimentary canal. This connection is made, or so I deduce, by the lacteals, and by the lacteals *alone*. In attempting an anatomical explanation of the phenomena of food transportation from the alimentary canal, I wish it to reflect the fact, or what I believe is a fact, that there is no anatomical explanation for absorption by the mesenteric veins.

The great lymphatic system begins in the mucous membrane of the alimentary canal, the circulatory apparatus does not; the import of this fact is that they are connected and the ending of one is the beginning of the other. I say ending advisedly, for the alimentary canal has two endings, one anatomical, the other physiological, the latter ending is the *beginning* of the great lymphatic system. As we have positive proof that the lacteals transport food from the alimentary canal, I assume there is an anatomical explanation for this physiological phenomenon, and the lacteals are constructed, *must* be constructed, to transport the food from the alimentary canal into their blind *cul-de-sacs*. The microscope informs us that the lacteals are supplied with cells, and I ascribe to these cells the power of performing this act. In other words, I contend that the power of transportation is inherent in the lacteals themselves, and not due to the absorption powers of their contents, as happens in the mesenteric veins. It must be remembered that the lacteals are empty when the alimentary canal is empty. There is nothing in their interior to absorb food until the food first gets in them. How does it get in them if not by the power of these cells? We have an explanation of absorption by the mesenteric veins, an incorrect one, I believe, for they are never empty, but to argue absorption for the latter (the veins) is practically to deny it for the former (the lacteals).

I wish to advance the theory that the *great lymphatic system is a gland*, that it begins in the mucous membrane of the alimentary canal and ends in the circulatory apparatus, that its purpose is to manufacture tissue food. It will be seen by this that I consider the anatomical, histological and physiological connection between these two apparatuses is made by the lacteal *cells*. This

connection is analogous, if not identical, with the connection between the glands and the circulatory apparatus. While the activities of one are directed toward the food, the activities of the glands are directed toward the blood, or rather plasma, each lacteal cell producing tissue food and transporting it to its *blind cul-de-sac,* while the glandular cell produces its particular secretion (or excretion) and transports it to its *blind tubule,* the blind *cul-de-sacs* of the lacteals eventually form the thoracic duct, while the blind tubules of the various glands eventually form their ducts. The peculiar construction of the great lymphatic gland can be easily understood from the fact that it must carry nutrition to all parts of the organism, and collect this nutritive material from the alimentary canal. This brings us to a consideration of the anatomical difference between the beginning of this gland and its ending in the circulatory apparatus. In the mucous membrane the *cul-de-sacs* are closed, they end, or rather begin, blindly while the thoracic duct is open. This plan is similar to that of the glands, the ducts of the mammary glands, those of the liver, of the pancreas and kidneys are closed in their beginnings and open at their endings, it would seem that all gland cells have the power of transporting their secretions (or excretions) into blind tubules, and I attribute the same power to the lacteal cells, and as the bladder is the emptying place of the kidneys' excretion, the outer world that of the mammary, the small intestine of bile and pancreatic juice, so the circulatory apparatus is the emptying place of the alimentary lymphatics, and, as I have explained, the emptying place of the systemic lymphatics, which are but branches of the great lymphatic gland. As the bladder empties its contents eventually into the outer world, and the same is true of the bile, pancreatic juice and milk (the latter goes into the infant's mouth) so the contents of the lymphatic gland which finds its way into the circulatory apparatus eventually finds itself fulfilling its function of nourishing the tissues and being eliminated. The inference of our text-books is that there is nothing to be eliminated from the blood but tissue-waste, while I contend that the blood contains many substances, that are very injurious. This I will explain.

If we study the structure of the great lymphatic gland we find the minor lymphatic glands are situated along the course of the vessels, and they receive only what passes the lacteals. Should the lacteals secrete only tissue food, these succeeding glands would have no material to produce tissue food, therefore they transport more than they secrete; it is the key to their function, for as is well known, they absorb (using that objectionable term) many injurious substances, even poisons. It is not their function to *select,* but to transport all liquid substances from the alimentary canal to the veins, whether these substances are of benefit or an injury. In no sense are the lymphatic glands protective; the system must depend on the selective powers of the organism, and the eliminative powers of the glands in the circulatory apparatus, to safeguard its health. It will readily be seen from this that the blood is not a pure fluid, but on the contrary a very impure one, in fact it is loaded with impurities, *especially after feeding.* I believe this is the explanation of glycogen in the liver, that it is but a stage of the metamorphosis of the by-products of the lymphatics on its career of elimination. The experiment proving that there is more sugar in the vein leaving the liver than in the vein going to it (portal vein) does not prove that sugar is absorbed from the intestine; the experiment is entirely inadequate. It is an argument which favors my theory as much as it favors that of absorption, but is proof of neither.

Having studied the arrangement whereby the great lymphatic system and the alimentary canal are connected, let us now pass into the alimentary canal itself. There is no question that in this apparatus the food is prepared for further *elaboration.* I am emphasizing this word elaboration, for it means so much in physiology, and yet so little; it is always leading us towards something, something that is understood to be of the greatest importance, but to the great discouragement of the student never reaches anywhere. In attempting to solve the problem that confronted me, I have given elaboration a purpose and an object. Rightly or wrongly I have determined that the aim and end of elaboration is the tissue food. Any analysis or criticism of my

paper should begin at my view-point. The question to be answered first is, "Is my view-point admissible, can structural anatomy be interpreted in the light of physiology, and *vice versa,* and is it a correct inference that when the food arrives at the tissues elaboration ends?" If not, most that I have said is error; but if admissible, the greater part of the analyses and criticism directed against my views has been misdirected.

As so much depends on my view-point, I would like to discuss it for a moment. It may be divided into two parts: (1) That structural anatomy can be interpreted by the physiological phenomena occurring in the parts to be interpreted; (2) that the particular purpose of the organism is to produce tissue food. If the first part were applied to a man-made machine, it would be synonymous to saying that as a machine is built, so it must work, and as it works, so it must be built.

Of the first part of my view-point, I do not imagine there will be any question; of the second, however, there may be a great deal. Therefore I would like to discuss it a little further. I have described what I mean by tissue food, but even if I am in error as to its exact nature, or even if tissue food is non-existent, my view-point is correct, if you but admit that the end of elaboration is the production of some definite substance, and the destination of this substance is the tissues.

Having explained what I mean by the tissue food, I will now attempt to determine its composition. To do this, even approximately, we must follow the liquid food from the alimentary canal to the tissues, *but no further.* The tissues must be recognized as the destination of food, *its destination, anatomically and physiologically,* otherwise my theory falls to the ground.

We know the composition of food when it begins its journey; we know its composition when it arrives at the tissues; we know each and every chemical, or other change, occurring while *en route,* and we can locate every histological structure in which each change occurs. The first of a series of such changes occurs in the alimentary canal, a second series takes place in the liver (according to our text-books), a third occurs in the alimentary

lymphatics. We have followed these changes to their ultimate, and found that but one of these products is found in the tissue plasma—that one is *the serum of the chyle*. This fluid and the tissue plasma are very similar in composition, and I consider it a justifiable inference that the serum of the chyle is the tissue food, or the nearest approach to this substance, that is never found in its purity, but always in combination. The natural deduction is that the alimentary canal and the great lymphatic system produce the tissue food, and this is the theory I wish to advance. I have explained how the alimentary lymphatics, continuing the manufacture of the tissue food, the same process is continued by the systemic lymphatics, the circulatory apparatus constituting a connecting link between the separated parts of the great lymphatic gland, or system, as our text-books designate it.

I wish now to refer to the theory of absorption. By absorption I mean that particular process whereby food is absorbed from the alimentary canal and transported to the circulatory apparatus by the blood circulating through the mesenteric veins. This function is not specially provided for by any anatomical arrangement; the mesenteric arteries, it is true, go to the alimentary canal, but they go to carry plasma to its secreting cells, and the returning venous blood goes to the liver, but, anatomically speaking, the mesenteric veins are distinct from the alimentary canal, just as distinct as the lacteals would be if they were devoid of cells. As far as I can discover, our text-books claim no anatomical connection between the two apparatuses, the function of absorption being the result of physical laws, and not the result of any particular anatomical design on the part of the organism as I claim for the lacteals and, for that matter, for all physiological phenomena. If, therefore, absorption is a fact, my viewpoint has met an obstacle that is very difficult to overcome; but, unless it is overcome, it is impossible to study, or rather interpret, anatomy in the light of physiology or *vice versa*, and the organism, unlike a man-made machine, works as it is not built to work, and performs a very important function for which no anatomical

arrangement has been provided. Absorption appears to be a physiological incident, in a man-made machine it would spell failure.

If absorption is a fact, of course it must be accepted; but we must also accept all the anatomical and physiological contradictions which go with it. Let us interpret those contradictions in the light of the glycogenic function of the liver. Sugar is absorbed by the blood in the mesenteric veins and carried to the liver, where it is converted into glycogen and stored up for future use. To be of future use, it re-enters the circulation to be further elaborated, and meets the fate of most elaborated products—it ends nowhere in particular. From my view-point, it ends in the tissues, and ends in them as an integral part of the tissue food, or else it is of no value whatever. If we follow the glycogen from the liver onward (whether it is glycogen or some derivative of glycogen, makes no difference), and we find it mixing with the chyle (blood) as it empties from the thoracic duct, and as one fluid, they both find their way to the tissues. This is a most extraordinary occurrence if glycogen is as important a substance as is claimed for it, and productive of many contradictory inferences. It is a very strange meeting this of the bile acids, glycogen and chyle, and eventually the tissue-waste products and the corpuscles, and a still stranger meeting place. When we consider the size of the liver, its enormous blood supply, the vast amount of bile and glycogen it secretes, the explanation of its functions and its purpose in the organism, as given in our text-books, would hardly explain its importance in a man-made machine.

These physiological contradictions are rivalled by those found in the anatomical arrangement of the blood vessels which have to do with absorption. The portal vein is but a receptacle of the blood (the venous blood, remember) of the mesenteric, pancreatic and splenic veins; this is a very strange arrangement to carry sugar to the liver; it is just as strange if their purpose is to secrete bile. As far as I can discover, our text-books offer no explanation at all. These veins carry blood from the stomach, pancreas

and spleen, so the liver receives their venous blood and its own arterial blood, yet bile and glycogen are highly oxidized products. This chemical fact is not explained by our text-books, nor is any explanation offered why the liver continues the work of the pancreas and spleen on the blood, nor do they explain why the blood should enter the circulatory apparatus in two places: one at the entrance of the hepatic vein, the other at the opening of the thoracic duct; why it should reach the tissues at different times, for the hepatic vein being further away from the tissues than the thoracic duct, it must reach there at different times. So it is a logical conclusion there are two tissue foods, which sounds as incongruous as having two kinds of milk. Physiologically and anatomically, the function of absorption presents many contradictions.

Just a word of explanation regarding the term *elaboration.* I have used this term to mean a function confined to the production of tissue food, it is therefore confined to the production of serum. Chemically speaking, and anatomically speaking, elaboration is possible only in the alimentary canal and in the great lymphatic system.

A final word regarding hunger, thirst and asphyxiation. I stated in my last paper hunger was *peculiar* to the alimentary canal, thirst to the lymphatics, and asphyxiation to the lungs. Hunger is a cry of the tissues for food, for nutriment; the stomach is the spokesman for the alimentary canal; thirst is a cry of the tissues for water, but water is included in tissue food; this cry of the tissues is responded to by the lymphatics, because it is the function of these glands to produce a liquid food, and the lymphatics of the throat constitute the spokesmen of that gland. The cry of the tissues for oxygen is a cry of *distress;* they are becoming poisoned, and the antitoxin to these poisons is oxygen,

NOTE—"G. E. Stahl, relying less on facts than one theoretical reasoning, endeavored to claim for the liver a very comprehensive pathological importance. He called in question the opinion as to the exclusive participation of the lacteals in the absorption of nutrition, which, since the discovery of the thoracic duct, had gradually become generally admitted; and at the same time he maintained that as large a quantity of chyle was carried with the blood through the mesenteric veins to the liver as that which found its entrance into the system through the lacteals." (Frerichs, "Diseases of the Liver.")

so the lung cells respond by their convulsive movements. In this way we divide the three apparatuses which control the destiny of the tissues in such great part: one to receive the food, the other to elaborate it into tissue food, the other to eliminate the by-products and waste, and each has its particular spokesman.

Growing Evidence That the Horse and Not the Motor Truck Is Most Economical for Short Hauls.—Manufacturers of heavy trucks—the horse drawn kind—report an unusual demand for that type of vehicle this spring. Accumulative evidence goes to show that while the motor truck has its uses, and very valuable uses at that, the short haul is more economically handled through the medium of the horse drawn vehicle. A well-known truckman in New York said last week:

"I have given up the use of motor trucks. The life of a motor truck is short, and I find that in moving merchandise in mixed quantities over short hauls I can do it more cheaply and expeditiously than I can by using motor trucks."

The largest coal dealer in Detroit has returned to the horse-drawn vehicle. He says he was induced to change for the reason that his motor trucks were in the shop too often for repairs. He stated that he had kept track of the running expense of a motor truck for one year, and that it cost $1,921.71.

"When I saw what motor trucks were costing," said this man, "I sold my motor trucks and went back to the horse."

An ice cream establishment in this city, through its manager, asserts that it cost the firm nearly half a million dollars to find out that the motor truck was not adapted to their business. This statement, and others of a like character, have been received from several quarters this spring by the Studebakers, of this city, and as the demand for horse-drawn trucks has advanced twenty-five per cent over last year horse-drawn vehicle men are confident that the horse is coming into his own again, and they are correspondingly happy.—(New York *Herald.*)

Have Opened a New Veterinary Hospital.—Drs. Hagyard and Shannon, Lexington, Kentucky, have opened a new hospital, which they moved into about May 1, 1914. We congratulate them on their enterprise and hope that they may have a long and prosperous career there.

SOME VERMINOUS PARASITES OF SOLIPEDS.*

By Prof. A. T. Kinsley, Kansas City, Mo.

Parasitism occurs in various degrees. Some parasites pass their entire life cycle upon their host, others visit their host only for supply of nutriment, and still others pass only a portion of their life cycle on or in their hosts, which they leave to undergo metamorphosis elsewhere.

Internal parasites of solipeds are many, and the diseases they produce are a large factor in the routine practice of veterinarians in the agricultural districts of the great Mississippi valley.

Internal parasites injure their host by: a. Abstraction of nutriment. *b.* Blood suction. *c.* Production of hemolytic or irritating chemical substances. *d.* Mechanically, injury to tissue of obstruction of natural passages.

Practically all of the more important internal parasites of solipeds pass the larval and adult stage of their life cycle in their hosts. They are, with few exceptions, oviparous, the ova being discharged in some of the body excretions. The ova hatch into the embryo, the length of time of incubation being variable and largely dependent upon environmental temperature. The embryo stage is usually passed on vegetation or in water, although this stage of some internal parasites is still unknown. The embryo is the usual form in which the parasite is introduced into the host.

The source of parasites is a very important consideration in efficient sanitation, and a knowledge of the habitat and the vitality of parasites external to their host is indispensable in controlling parasitic diseases. Practically all of the intestinal parasites under consideration in this discussion pass some part of their life cycle outside of their host, and, as a rule, this portion of their life cycle is passed in wet, marshy, improperly

* Presented to the Illinois State Veterinary Medical Association, at Chicago.

drained soil, and especially in climates where there is no severe cold weather. The embryo of the pulmonary strongyle is said to be destroyed in a few days by water or damp soil, its longevity being favored by dryness.

The vitality of the embryo of most of the internal parasites is not definitely known, but they are known to be capable of withstanding rather intensive external environments, such as desiccation and marked temperature variations. However, it is thought that they have little resistance to putrefactive changes of vegetation or the water they inhabit. Their capability of withstanding various environmental influences that are usually destructive to other forms of life further complicates the problem of control work. Just how long the vegetation, water or soil of a pasture or premises will remain infested after diseased animals have been removed will depend largely upon climatic conditions and upon the nature of the vegetation and soil. Under the most adverse conditions for the parasite a pasture or premises may be considered free from parasites in from six months to two years.

The usual channel of entrance of internal parasites is the digestive tube, either in food or water that has been contaminated by the discharges of infested animals or by infested land. Pulmonary infestation with the embryo of the strongyle carried upon particles of dust may occur. It is possible that some few of the internal parasites of solipeds are introduced through the skin, either directly through open lesions or indirectly through the agency of some external parasite, as the mosquito.

The lesions produced by parasites are quite variable. The general lesions produced by blood-sucking parasites are anemia, emaciation and frequently œdema. Local lesions of varying extent are usually also evident. The special lesions will vary according to the parasite in question; pulmonary strongyle produces bronchitis and pneumonia of a catarrhal type. The larva of the Sclerostoma equinum produces thrombosis and usually aneurismal dilatations. Inflammation, degeneration and necrosis are frequently produced by a variety of intestinal parasites.

Necrotic dermatitis and a number of other lesions may be produced by parasites.

The avenue of elimination of the parasite, particularly when it is in the stage or cycle in which it can exist external to the host and be capable of infesting another host, is quite important in the prevention and spread of parasitic diseases. The ova or embryo of intestinal parasites are eliminated in the intestinal excretions. The ova or embryo of pulmonary parasites are eliminated in the discharges from the lung. By proper disposal of excretions containing ova, embryo, or adult parasites, the possibility of infestation will be diminished, and by the persistent proper disposal of the infested excretions parasites can ultimately be eradicated.

The symptoms of parasitic infestation are quite variable. The general symptoms resulting from blood-sucking parasites are anemia, œdema, emaciation and unthriftiness. As a general rule either young animals or aged animals are more frequently affected. The specific symptoms will vary according to the nature of the parasite, the extent of infestation and the age and resistance of the infested animal. The infestation of the lungs result in pulmonary disturbances evidenced by cough, muco-purulent discharge from the nose, moist rales, and possibly solidified areas in the lung. The cough occasioned by pulmonary parasites is characterized by several expulsive efforts occurring in rapid succession. The nasal discharge is mucopurulent in character and may contain ova and disintegrated parasites which can be observed by microscopic examination. Intestinal parasites may be intensive blood suckers and deplete the animal body, as well as producing a catarrhal enteritis which may cause inappetence or a capricious appetite. There will also be parasites in some stage of development in the feces.

The diagnosis of parasitism in the animal body may or may not be difficult, depending upon the extent of infestation and upon the location in the animal body. If there are only a few invading parasites, the host may appear to be normal, and the diagnosis of parasitism be practically impossible. The finding

of parasites in some stage of development in the excretions is positive evidence of parasitism. Thus the finding of the parasite in the nasal discharge or intestinal excretions in some of its stages of development is absolute proof of parasitic infestation of the respiratory or digestive organs. An eosinophilia evidenced by a blood examination is additional evidence in the diagnosis of parasitism.

In prognosticating the outcome of an animal infested with parasites, the resistance and general condition of the animal, as well as the extent of infestation must always be taken into consideration. A young animal that is intensely infested with blood-sucking parasites, located either in the intestine or lung, should be considered as a doubtful case. A fully developed horse in good condition, with only slight infestation, will usually recover if properly treated.

Because of the difficulties of treatment it is far better to prevent infestation than to treat animals that are infested.

Prophylaxis includes the quarantining of infested animals and the proper disposal of their discharges. It also includes the proper consideration of pasture land, hay and water supply, and the cleanliness of the barn and yards. Grass or hay from improperly drained low marshy land or farm lands that retain the drainage from infested lands should be excluded from the diet. Surface water is frequently a carrier of parasites and should be guarded against.

The curative treatment will be discussed in relation with the consideration of each parasite.

Because of the magnitude of this subject, only the most important parasites will be considered.

Ascaris Megalocephala, the round worms, or what are called the lumbricoids, are quite common, particularly in animals of one to two years of age. The parasites are usually obtained by the host from water, vegetable matter, pasture land, hay or any food stuff contaminated by dust containing the embryos. The adult lives in the small intestine. The ova are discharged from the host in the intestinal excrements. They

hatch into embryos which have very great vitality. It is claimed they have persisted on vegetable matter, in infested pastures, for as much as two years.

The usual lesions produced by this parasite are catarrhal enteritis, which in extreme cases may be associated with depletion of the body and in some instances obstruction of the bile and pancreatic ducts, or the intestine itself. A few instances are on record where these parasites have perforated the mucous membrane and the entire intestinal structures, permitting infection, resulting in fatal peritonitis.

The symptoms consist of rough coat, unthriftiness, indigestion, emaciation, perianal mucous deposits, and in cases in which the hepatic and pancreatic ducts are obstructed, disturbances of the liver and pancreatic functions respectively. In a few instances there may be obstruction of the intestine sufficient to produce fatal colic.

The most common diagnostic evidence of infestation by these parasites is perianal mucous deposits, and the presence of these particular parasites may be proven by the finding of the ova or the adults in the intestinal excrements.

The treatment of this condition, as of other parasitic disturbances, should be considered from two viewpoints, namely, preventive and curative. The prophylactic treatment consists in preventing infestation by keeping the barns and yards clean, properly treating the manure heaps, so that ova or embryo contained therein will be destroyed, keeping the animals off of the pasture lands that are known to be infested and by feeding food stuffs that are known to be free from infestation as well as giving water only from deep wells.

The curative treatment is not always successful, particularly the first attempt. Some have found that two-dram doses of tartar emetic on the morning feed for three or four days, followed by a brisk purgative, is efficient; others have successfully used one to two-dram doses of turpentine, given in milk or linseed oil. Three or four-dram doses of santonin has been recommended, but is rather expensive. Iron sulphate in two-dram

doses, to which is added five or ten grains of arsenic trioxid, has been found quite efficient. Beechwood creosote, given in capsules in one-half dram doses, has given good results where other agents have failed.

Oxyuris Curvula and Mastigodes, or Pin Worms, are quite common in solipeds in this section of the country. Their life cycle is similar to that of the round worm. The embryos are obtained by solipeds in food or water, and they rapidly develop into larvae and adults in the intestine. These parasites are located in the large intestine (caecum, colon and rectum). Unless pin worms occur in large numbers, they do not produce general lesions. In extreme cases of infestation there may be slight anemia and limited emaciation. They locally produce inflammation of the mucous membrane and occasionally the eggs, embryo and larva may be found in the submucosa in the infested area, rarely they are found in the capillaries.

The diagnosis of this condition is dependent upon finding the pin worm in the fecal matter.

The most common symptoms of pin worm infestation is anal pruritis, perianal mucous deposits, indigestion and, in extreme cases, colic.

The prevention of infestation by pin worms consists in eliminating food and water that are likely to be contaminated. Therapeutically we find this parasite much more difficult to control and eradicate from the host than the round worm. Enemas of quassia chips or even a dilute solution of creolin or kreso, succeeded by a brisk purgative, is frequently quite efficient. It is not possible, however, by this method to eradicate the parasite that inhabit the caecum and the anterior portion of the colon, and for their destruction it is necessary to use similar or the same agents that were recommended in the treatment of the round worm. It may be found necessary to prolong the treatment for the destruction of the pin worm.

Sclerastoma Equinum, or Strongylus Armatus, is one of the most common and perhaps most destructive of all internal parasites of solipeds in this section of the country. In

different areas it has been found that from one to one hundred per cent. of all solipeds are infested. The life cycle of this parasite varies. The ova hatch, either in the intestines or external to the host in the feces, into a small globular embryo which may live for months. The embryo inhabits water, also vegetable matter grown near ponds where the embryo hatch, and this is usually the source of infestation. After the embryos are ingested in the food or water, they develop in the intestine of the host into asexual larvae, some of which bore through the mucous membrane, becoming encysted in the submucosa, others, passing through the intestinal wall, meander out into various organs and tissues, still others attack blood vessels where they cause inflammation, and later a degeneration succeeded by a dilatation which is followed by thrombic formation. A larva usually remains in the thrombus where it develops, and later it migrates along in the vessel until it passes into the capillaries where it perforates the tissues, and if location is favorable it enters the lumen of the intestine, where it becomes sexually mature and attaches to the mucous membrane of the intestine. Many of the larvae encysted in the submucosa also later pass into the intestine and mature.

The location of this parasite in the animal body is variable so far as the larval stage is concerned. They have been found in practically all tissues. The blood vessels most particularly invaded are the mesenteric arteries, anterior and posterior, coelic axis, spermatic artery and the posterior aorta. The adult worms are found attached to the mucous membrane in the large intestine.

The lesions produced by *Sclerastoma equinum* vary according to the extent of infestation. Anemia prevails as a result of direct abstraction of the blood by the parasite, and also as a result of hemolytic action of a poisonous substance secreted by the parasite. There may also be emaciation. Locally it produces inflammation of the intestinal mucosa. The larvae produce necrosis, degeneration, aneurism, thrombosis, embolism, ischemia or hyperemia, as well as cysts, which may later un-

dergo changes, ultimately becoming fibrous cicatrices or calcified necrotic masses in the submucosa, liver, pancreas, lung or other tissue.

The general symptoms of infestation by this parasite is anemia, indigestion, colic, perianal deposits and the elimination of the parasite in the pus. Special symptoms resulting from the lesions produced by the migrating larvae consist of circulatory disturbances in various organs, such as muscle, liver, brain, intestines, kidneys, etc.

Preventative treatment consists in the feeding of non-infested food stuff and the giving of pure water, also maintaining the animals in barns and yards that are known to be free of the embryo of this parasite.

Curative treatment is efficient only in ridding the body of the adult form of this parasite, the larval form being located in the various tissues cannot be destroyed by any known medicament that would not be equally destructive to the animal tissues. The adult may be destroyed by treatment prescribed for round worms and pin worms. Any line of treatment should be persisted in for sufficient length of time to be certain that the adults have been destroyed, and then the animal should be given a brisk purgative.

Sclerastoma Tetracanthum. This parasite is frequently associated with the sclerastoma equinum. It prevails in practically all sections of the country. Its life cycle and method of gaining entrance to the animal body is practically identical to that of the sclerastoma equinum. Some have questioned whether or not it constitutes a separate species. The larval form of this parasite is invariably encysted in the submucosa, where, after developing into maturity, it enters the intestine and attaches to the mucous membrane. Large numbers of the larvae necessarily cause damage to the intestinal wall, and large numbers of the adults damage the mucous membrane of the intestines as well as deplete the abstraction of blood. However, they are less damaging blood suckers and are much less dangerous to solipeds than the sclerastoma equinum.

The symptoms produced consist of unthriftiness and anemia associated with digestive derangements.

The same treatment can be used as that for the sclerastoma equinum.

Filaria Papillosa. This parasite is more or less prevalent in solipeds throughout the entire United States. The avenue of entrance is not positively known. It is usually found meandering through the tissues in serous cavities, and when in large numbers, in the peritoneal cavity. They may accumulate in sufficient numbers in the tunica vaginalis to occasion a serous inflammation characterized by an excessive outpouring of serous fluid, which accumulates in the vaginal sac producing hydrocele. Occasionally this parasite gains entrance to the aqueous humor of the eye where it occasions more or less disturbance to that organ.

The treatment in general infestation with this filaria is not successful. Cases in which the vaginal tunica or eye are affected may be relieved by operation.

Taeniasis of solipeds in this section of the country is very uncommon. One farm only in Missouri has been identified as containing animals harboring tape worms.

Strongylus Arnfieldi, or Lung Worm. This parasite is not generally prevalent in any portion of the United States. It is destroyed external to the host in a very short time by exposure to wet or damp environments, and since practically the entire Mississippi Valley is amply supplied with moisture, it would be rather exceptional to find this parasite in sufficient numbers to cause alarm.

The adults are found in the bronchial tubes and bronchiales, the ova and embryo being discharged in the excretions from the bronchial tubes. They gain entrance into the host by the feeding of contaminated food stuff and water, or by inhalation. The exact manner in which those that are ingested reach the bronchial tubes has not been positively determined. The adults are blood suckers and occasion an inflammation which is associated with an accumulation of muco-purulent sub-

stance in the bronchial tubes and bronchioles, which in turn favors infection resulting in catarrhal inflammation and in some instances the occlusion of the bronchioles and collapse of the air cells.

The symptoms in the initial stages of the disease consists of an occasional cough. As the parasites become more numerous, the cough becomes more frequent and is of a paroxysmal character. The animal frequently coughs until it falls to the ground exhausted. Emaciation is rather rapid, the animals become weak, depressed and die. If the discharge from the nose is examined, it will be found to contain disintegrated adult parasites, many ova and occasionally an embryo.

Prevention consists in the quarantining of the affected animals, keeping the premises free from dust by frequently sprinkling with a parasiticide and giving the animals clean, wholesome food and water. The treatment consists in the application of volatile drugs that may be inhaled by the animal and which will facilitate removal of the bronchial contents and will destroy the parasite, as oil of eucalyptus, iodine and turpentine. Medicaments may be introduced either in the form of a vapor or spray.

Continues to Grow in Strength and Influence.—The National Association Allied Horse Interests elected twenty-nine new members in April, and the publicity work which this organization is carrying on is being reflected in the attention which is being given to the horse in many leading periodicals. Agencies for the promotion of the usefulness of the Association are being established as fast as possible in every State in the Union, and possibly slowly, but nevertheless surely, the original plans of the Association are being consummated. If only one out of every hundred horse lovers in the United States co-operates in making the N. A. A. H. I. a success, the work it can accomplish along comprehensive lines will be far-reaching in its effects.—(*The Horse Lover.*)

DISCUSSION OF PROFESSOR KINSLEY'S PAPER.

By Dr. H. A. Pressler, Fairbury, Ill.

I have listened with interest to the very able paper by the distinguished and learned gentleman, its author.

I say with interest, because to me it is the most interesting subject of the present time. I believe the intestinal parasite is directly and indirectly the cause of more trouble than we have even suspected in the past.

I wish just briefly to speak of those different intestinal parasites which I consider produce the more varied and harmful results.

During the past twenty years of active practice I have had perhaps as much, if not more, experience with these pests than any one present here to-day. In fact, so familiar have I become with the symptoms and the appearance of the horses that are infested that when a man comes into my office and begins with a description, I have reached a conclusion as to the cause of the trouble before he ends his tale of woe.

I have a scope of territory along a small stream, which runs in a south and western direction for a distance of perhaps six or seven miles; along this stream there is more or less timber. This scope of territory seems to harbor more of the special parasite of which I shall speak than all the rest of my field of practice.

Some years ago (perhaps nineteen) a man came to me with the request to go with him and see a colt which he had learned was sick in the timber pasture; it was in the summer and the water in the creek was very low, there being no running water and only in the lowest parts of the creek bed was there any water for the horses in the pasture. We found the colt down, and he could not get it up; I knew it was nearly dead, but just how long it had been sick nobody knew. There not being sufficient symptoms to guide me in making a diagnosis, others than

unthrifty condition, pale mucous membrane and general weakened condition, I requested the owner to go with me the following day and we would hold a post mortem, which we did. We found a quantity of the *Sclerastoma Tetracanthum* in the large bowel, and placing some in a bottle I took them with me as a curiosity, not knowing positively whether they were the cause of the death of the colt or not. I presented the specimen to Dr. Stringer who had been practicing in this community for a number of years; he informed me of the nature of the parasite, which had caused the death of the colt.

A few years later I was called to a farm not far from the one just mentioned. I found three grown horses lying dead; the three were as nicely in a line as if they had been hauled by a team of horses; they were about the same distance apart. Three or four more were standing near with head drooped, and muzzle swollen, some blood and mucus discharged from anus and the nostrils, very weak and muscles in a tremor; discolored mucous membranes. I was somewhat alarmed and very much interested in the man's animals. First, because he was a well-to-do farmer and stock man, while I was a new man in the field and did not wish to make a blunder; in fact, things looked to me as if some contagious disease had broken out, and I did not know what the result might be.

I requested that he call counsel, which he did, calling Dr. Stringer. I think I am correct when I say that Dr. Stringer was surprised at the scene of three large draft horses lying in such a position, and three or four more nearly dead, with others more or less affected. Strange as it may seem, neither of us suspected that the intestinal parasite was the cause of the trouble. We posted one and examined the lungs, liver, heart, spleen, kidneys and throat, but did not examine the contents of the colon and caecum. The next one we proceeded with in like manner and were about to pass to the third dead animal when we thought to examine the large bowel, which contained innumerable quantities of the *Sclerastoma Tetracanthum* and *Strongylus Armatus*, which told the story.

Had we not thought to examine the colon and caecum, there doubtless would have been placed in veterinary literature a full and complete history of a new and fatal malady, the germ of which had not yet been isolated, so small was the germ that the strongest microscopic lense failed to detect and the finest porcelain filter would not hold back. Four more horses died within the next forty-eight hours. The other animals were removed to a different place, if I remember correctly were placed in the stable and treated for some time without the death of another animal.

About ten years ago a man shipped into our town two carloads of western horses, principally two-year-olds. They had a rather unthrifty appearance. After some time of unsuccessful attempt to dispose of these horses, they were finally purchased at a supposed bargain by a farmer living on a farm adjoining the one I just mentioned, the farms being separated only by the public highway. This man took the colts and turned them in the woods and stalk field together with his own native colts and horses. They began to die, he called me, and it was plain to see the cause; the sick animals passed the parasites in quantities.

The animals being unbroken and wild, it was a task to give medicine to them, the owner after more or less effort giving up; and during that winter lost fifteen head, some if this number being his native colts.

About three years ago a renter living on the same farm lost five or six head from the same parasite within a period of perhaps less than two weeks. The owner was of a rather peculiar and superstitious character, and attributed the cause of the death of his horses to "milk sick," which was said to have caused the death of his cow some time during that summer.

A few weeks ago I was called to a man's premises to see and examine a Shetland pony which he had found dead in the pasture. He informed me that this was the second one that he had lost within a few days, and that he feared a contagious disease was going to take the rest of the herd. It was too late

in the evening for me to post the animal, but I informed him that it was nothing contagious and that it was due to intestinal parasites. Promising to return in the morning, I had him dig a hole and have things ready to bury the pony; after examination I found the typical hemorrhagic spots, with more or less inflamed patches, under the mucous membrane, but there were few, if any, of the parasites visible.

It is a very peculiar fact that in some cases, where an animal has lain for some time, the parasites dissolve, digest or disintegrate.

I have placed them in bottles of water and find some will disappear and there remain a sediment at the bottom of the bottle.

Another peculiar fact I have discovered, that in some cases an animal may be badly affected, and there cannot be found in its feces any of the parasites.

On post mortem in a number of these cases I found the intestinal tract inhabited by thousands of the worms.

I have spoken of the deaths of animals which have occurred in certain localities in along this creek and timber pasture; but I find more or less of the parasites in question in *all* directions.

Perhaps a month ago, I was called to a farm near what was originally a large grove containing seven hundred or a thousand acres of timber, and on the south and centre was a large pond, which some years ago was dredged out and now is under cultivation. I refer to Oliver's Grove, of which place doubtless some of you have heard. This man had a two-year-old colt that was staggering about, seemed partially paralyzed in its hind legs, and very weak in its front legs, was thin in flesh, hair rather long, mucous membrane pale, and upon examination of feces found both the *Sclerastoma Tetracanthum* and *Strongylus Armatus*. The colt had been previously treated for stomach staggers. I saw the colt two or three weeks ago, and it was able to trot away with scarcely a hitch or stagger. In this case the staggering was due doubtless to the *Strongylus Armatus*.

I was called in consultation during the month of August last summer; the case was a large sorrel mare which the owner valued at two hundred and fifty dollars. The animal was insured. The case had no history other than that the owner, on going out "choring," found the mare down near a hedge fence. He called in a licensed veterinarian, who pronounced it lightning stroke. After the animal had lain for about three days, he called me. After examining and obtaining what little history there was to the case, I told him there was no evidence of lightning stroke, and suspected paralysis due to an embolism, caused by the *Strongylus Equinum*. I informed him that the animal probably would not recover, and requested that I might be present at the post mortem, which would prove whether the animal died from lightning stroke or worms. In about five days the owner decided that the proper thing was to kill the mare.

It was the most typical case of intestinal parasites, and their effect I ever saw; embolism in the posterior aorta. We found the *Strongylus Armatus* both in the aorta and the mesenteric arteries. The colon and caecum contained the parasites in great quantities.

Now here I wish to say that I believe *most* cases that we call paraplegia, if not *all* of them, are due to this parasite, *Sclerostoma Equinum*.

Drafters Bring Good Prices.—A sale of draft horses recently held by North & Robinson at Grand Island, Neb., furnishes an excellent illustration of the value of good stock at the present time.

The entire lot consisted of 40 head of Percherons, Shires and Belgians, all animals of good quality, and consequently high prices ruled. Percherons were the favorites, one stallion bringing $1,750 and anothr $1,500. Twenty-four Percherons sold at an average price of $630, while the entire lot of 40 head averaged $539.—(*The Horse Lover.*)

MAINE LIVE STOCK INDUSTRY.*

By Dr. A. Joly, Live Stock Sanitary Commissioner, Waterville, Me.

During the short time in office I have found out that the live stock sanitary commissioner is expected to be a veterinarian, a sanitarian, a pathologist, a bacteriologist, a financier and a farmer; in other words, a sort of encyclopedia; but I did not know that he should also be a preacher. No wonder that our governor considered a long time my appointment. I am told that he was afraid that the farmers would not understand me.

Perhaps it might be well at this time, for me to apologize for my defective pronunciation of the English language. Knowing the generosity of the American people, I can, in advance, depend upon your indulgence, for I want you to give me credit for my persistence, and take into consideration that twenty-four years ago I came into Maine, located in Waterville, with the firm purpose of learning the language of Shakespeare. I am still at it, and my friends have convinced me to give up all hope of returning to my native land.

The subject assigned to me is so vast and so important that, in the brief space of twenty minutes allotted me, I can offer you but a few thoughts to consider.

Maine has over $28,000,000 worth of live stock. Maine appropriates $50,000 a year to carry out its sanitary laws, governing the moving of domestic animals, facilitating and encouraging the live stock interests, and extirpating or controlling all infectious and contagious diseases that may exist among cattle, horses, sheep and swine—and especially tuberculosis.

During this past year we have condemned 1,021 animals that were a menace to public health and to our live stock industry.

Sixty-seven horses were found affected with glanders, and 954 head of cattle were condemned as tuberculous. Nevertheless we feel that we have glanders and even tuberculosis under

* Read before the State Board of Trade, at Portland, March, 1914.

control, and can keep it so if our local boards of health will co-operate with us.

It is of the greatest importance that our milk supply comes from tested herds; it is a protection that we owe to the consumers. It cannot be denied that bovine infection is transmissible to man and principally to infants through tuberculous milk. This fact has been established. No local board of health should allow milk sold unless produced by a tuberculin-tested animal; and no man has a right to claim that his cows are free from tuberculosis, unless he has had them tested. So it is up to you, business men of the State Board of Trade, to see that your respective localities elect men on your local boards of health who understand their duties and see that such laws are carried out.

Maine with 60,000 farms and with 3,000,000 acres of tillable land—an average per capita of about four acres—it would seem, should produce at least what it consumes. Yet statistics show that we import over seven million dollars and a half worth of western grain yearly; we import butter, cheese and even cream.

We import 650 carcasses of beef a week at an approximate cost of $2,839,200 a year. With the importation of mutton, pork and canned meat it would figure out to over three million dollars a year.

During 1913 we imported 8,000 horses, mostly draft horses, at a cost of $1,500,000. Our importation in grain, cattle and horses amounts to $12,000,000 a year.

Maine should raise its own horses. Reports have been received from about 10,000 correspondents of the Bureau of Statistics of the Department of Agriculture upon the cost of raising colts on farms to the age of three years. The average for the United States is found to be $104. Even at this apparently high cost it would be profitable.

To begin with, it would mean $104 saved, $208 on a pair, and at the age of three, a pair of draft horses will earn far more than their living, and at the age of four or five, they would be worth at least $500.

Farmers should buy mares instead of geldings. They do not

cost any more to feed and they can be bred at such a time of the year as not to interfere much with the work on the farms.

To encourage horse breeding, perhaps it might be advisable for the state to own a few stallions, systematically distributed throughout the breeding districts during the season as is done in France, where all breeding stallions are either owned by the government or have government authority to stand for service.

Thirty years ago Maine had 351,000 head of cattle, 105,000 more head than she has at the present time. Thirty years ago Maine had 577,000 sheep, 457,000 more than she has to-day. We have 40,000 swine compared with 71,000 in 1884. With the decrease in live stock, the improved land has been reduced by 124,000 acres.

In order to render justice to our tilling land, we must raise more live stock, and with more live stock it means more fertilization, which would allow us to raise our own grain.

Of all the various kinds of stock raising, dairying is the most profitable, and it pays a higher possible income when properly conducted than any customary vocation on the farm. At the same time it will put the farm in a higher state of cultivation. But every farmer in Maine cannot be a dairyman; a man has to have some adaption in that direction. While a man might fail as a dairyman, he might be successful as a raiser of beef animals.

Beef can be raised at a profit in Maine; there is no question about it, and why not? Our predecessors thirty-five years ago raised beef and were prosperous and raised large families, and Maine was richer by 124,000 acres of improved land than she is to-day.

The raising and fattening of prime beef is the perpetual asset and industry of the farmers of England and Scotland, and has been for 150 years. All the world knows to what degree these British farmers have been successful, and they can raise beef at a profit, even on high-priced land.

Canada, with its cold climate and long winters, exported to this country during 1913 210,978 head of cattle, valued at $6,871,667.

If there was no profit for the Canadian farmers in raising beef animals, the small province of Saskatchewan would not have appropriated $500,000 to foster its live stock industry.

Beef and dairy cattle, hogs and the mutton breed of sheep are to be accepted as security by the provincial government, provided all males are pure bred and females are high grades.

The Grand Championship of the International Live Stock Show, held in Chicago last December, was awarded to a steer, fed on anything but corn, and which was raised by J. D. McGregor, of Manitoba.

The same can be done in Maine; but we must improve our method of farming and adopt the system of crop by rotation. Much of our land, it is true, is too rough for the cultivation of crops and must be kept in permanent pastures; but these same pastures could be improved with little work. Our farms should be fenced and cross-fenced, so that hay fields could be used as pastures at certain times of the season when the grass begins to fail.

On the 8th of last December, on my way from Chicago to Montreal, I noticed, going through Michigan and the Province of Ontario, herds of cattle, hogs and flocks of sheep grazing in hay fields, well fenced.

Our sheep industry is deplorably on the decrease, when sheep can be raised at a profit and with hardly any labor.

Swine industry is also neglected when it should be considered as a mortgage lifter.

"Live stock upon the farm should be regarded as machines for manufacturing agricultural products into forms more concentrated and possessed of a higher value. These products can be shipped to better advantage than the materials could be from which they are made, since ordinarily the cost of shipping decreases with the increase in the concentration of the product shipped. The concentration thus secured is usually very marked, as, for instance, when bulky foods are turned into milk and flesh. In addition to the freight thus saved, much coarse and bulk food grown upon the farm, otherwise largely wasted, is given a money value.

"The straw of what is termed the small grains and corn stover—that is, corn stalks without corn—would be turned into money."

While the animals are thus employed, so to speak, in manufacturing food into more concentrated products, they give back to the farms the greater part of the fertility contained in the food, where the management is correct.

Whenever, therefore, the living animal is used as a machine, it is important that this living machine do its work to the best advantage, and for that reason animals of the right type should be chosen for the purpose when once decided upon.

For dairy purposes we have the Jersey, the Holstein, the Guernsey, the Ayshire and the Dutch Belted, and for the beef type of cattle we must choose from the Shorthorn, the Hereford, the Polled Durham, the Aberdeen Angus, the Galloway and the Sussex.

We must improve our breed of cattle and get rid of our scrubs as fast as possible. We should have more pure-bred animals, and it does seem that the time has come for Maine to go into raising beef and more sheep and more hogs, when one takes into consideration the shortage of meat animals all through the United States. According to estimate by the Department of Agriculture, a shortage is shown of 18,259,000 meat animals in the United States since 1910. Combined exports of cattle, hogs and sheep during 1913 were valued at only $895,603, compared with $3,553,349 in 1912 and $14,289,509 in 1911, and all prospects are that export trade in live stock during 1914 will be even lighter than that of 1913.

Maine should begin to produce what it consumes and supply its home market. In 1913 we imported 33,800 head of cattle in carcasses to supply our meat market. On the other hand, we shipped to Watertown and Brighton stock yards 35,924 calves. These 35,000 calves should have been kept and raised on our Maine farms for our own consumption. To control our market we must have State meat inspection, for our people want the best

and will not buy uninspected meat. During 1913, Maine shipped 7,580 head of beef animals to Watertown and Brighton stock yards. It is true that a large amount were bologna cows, but there were some 2,500 fat animals from Maine slaughtered in Massachusetts under United States Government Meat Inspection, and part of it was shipped right back to our local market and forced us to pay freight both ways.

To increase our live stock industry, more capital is needed; according to our bank commissioner's report, two-thirds of our 60.000 farmers are free from mortgages, so that our capitalists could be easily secured, and there could be no trouble in raising funds. Mr. G. A. Ryther, vice-president of the National Live Stock Bank of Chicago, says:

" There can be no more desirable loan than one on cattle in the feed lot, making daily gains in weight, as each pound added increases the value of the security. Even in the West, the element of risk has been largely decreased in recent years, as the practice of winter feeding has become general.

" During the past quarter of a century the nature of the business of financing, feeding and grazing operations has undergone a radical change, and to-day we find cattle and sheep paper acceptable by banks in every part of the country. At such live stock centres as Chicago, Kansas City and Omaha, it is standard, but even in New York and New England banking centres this class of security finds keen purchasers. The country banker carries it among his assets with confidence, and private individuals seek it as a means of lucrative investment."

In North Dakota, if a farmer desiring a loan can show he has milch cows and is raising feed, he stands a better chance to get what he wants than the farmer who is growing grain only. Some banks even offer special inducements to settlers to buy cows. One of these banks owns a tract of land which they offer for sale on a milch-cow basis. The scheme is novel and interesting, as it shows how much confidence is had in the future dairying and stock raising possibilities. The terms which the bankers offer to settlers are as follows:

"He must have five milch cows, two mares and enough machinery to grow a crop of alfalfa, corn, millet or other fodder. Nothing else is demanded. With the cows, mares and machinery he may move onto the land without paying a dollar and live on it two years. At the end of that time he agrees to pay $100 of the pricipal and $100 each year afterwards with interest at the rate of 6 per cent. When 60 per cent. of the principal has been paid, the purchaser is given a deed and the bank takes a mortgage for the balance."

Maine live stock industry is the most vital industry of our State, of all other industries combined, and in order to give it a renewed activity and all the necessary encouragement, gentlemen of the State Board of Trade, it demands your moral and financial support, by assuring the farmers who have to take chances with the uncertainty of the weather, that whenever the crops are not adequate to the requirements, they can step in any of our banks and feel that they will be welcomed and readily assisted.

Mississippi Board of Veterinary Examiners.—The examination for license to practice veterinary medicine and dentistry in the State of Mississippi will be held at Jackson June 19, 1914.

North Carolina State Veterinary Medical Examining Board will hold its next examination for license to practice veterinary medicine in the State of North Carolina at Wilson, June 23, 1914, in connection with the meeting of State Veterinary Medical Association, which will be in session there at that time.

New York State Board of Veterinary Medical Examiners will hold its summer examination for license to practise veterinary medicine in the State of New York on Tuesday, Wednesday, Thursday and Friday, June 23, 24, 25 and 26, 1914, in New York, Albany, Syracuse and Buffalo. Candidates will be notified of the exact place in each city. Make application to Harlan H. Horner, Chief of Examination Division, The University of the State of New York, Albany, N. Y.

STATE VETERINARY BOARD EXAMINATIONS.

By N. S. Mayo, Chicago, Ill.

The examinations given by state examining boards are very important, not only to the candidates for examination, but to the practitioners in that state, as well as the profession at large. These examinations do not appear to have the consideration given them that they deserve.

There are only a few states that do not have laws regulating the practice of veterinary medicine, so that the domain of the itinerant quack who usually "flits between two days" is certainly growing smaller. While the free area for the "simon pure" quack is nearly eliminated, it is important that the individual who hovers in that shadowy region so close to ignorance and quackery that a separating line cannot be drawn, should not have the seal of official approval set upon him. Examinations are always subject to criticism, as they are more or less artificial, and standards vary greatly with different individuals, but they are the best means we have of determining a man's fitness for practice. Personally I believe a combination of written and oral questions to be very desirable, particularly where the candidates are strangers to the examiners. It gives them an opportunity to "size up" the candidate, his ability, qualifications and character, that cannot as well be brought out in a written test only. In many cases where the questions are not clear, a candidate may get entirely on the wrong track through no fault of his own. Most candidates hesitate to ask questions of the board. One question asked by an examining board was to discuss "splenic fever." One of the candidates asked which they wanted, anthrax or Texas fever, and he was told Texas fever. As a result of this question, a number of candidates had to rewrite their papers on this topic.

The preparation of examination questions is very important, and they should be carefully prepared. They should be on the

subject indicated, up to date, and prepared to bring out the candidates' general and specific knowledge on the subject. So called "catch" questions should be avoided as far as possible, and every effort made to give the candidate a "square deal." The following questions *on surgery* were asked recently by a state board of veterinary examiners:

SURGERY.

1. Describe the gall bladder in the ox and horse.
 a. Describe the operation for removing gall stones in the horse.
2. Why does a cow chew her cud and when does she lose it?
 a. How does she regain it?
 b. Describe the œsophageal groove (*Sulcus Oesophageus*).
3. What is the operation for Stringhalt?
 a. Describe the operation.
 b. What is the cause of Stringhalt?
4. Describe the trifacial neurectomy.
 a. Why is this operation done?
5. What is staphylotomy?
 a. Describe this operation.
 b. Why is this operation done?
6. Give technic ligation of the carotid.
 a. Differentiate the circulation of the blood in the brain of the horse and ox.
7. What is keratoma?
 a. Give treatment.
8. Describe aneurism.
 a. Give treatment.
9. Describe paraphymosis.
 a. Give treatment.
10. What is the best treatment for canker and how to apply it?

Here the subject of anatomy, physiology, the impossible and improbable, with some surgery, is scrambled together into a remarkable conglomeration.

We hope some of our skilled surgeons will tell us how they have removed the gall stones from a horse or performed trifacial neurectomy for facial neuralgia in the horse or cow. With such an amount and range of practical operations that should be performed by the average veterinarian, it is remarkable that so few were included in this list of questions.

The variability of standards set for practice is probably as great as is the variation in size of the states. This should not be so.

A movement has been started and is making some progress to have reciprocity between states. To insure fairly satisfactory results from such arrangements, there should be some similarity of standards of examinations.

It has been suggested that there be a national examining board, but this is objected to as infringing upon the rights of the state, but some such arrangement seems highly desirable. Would it not be possible to have a committee of the American Veterinary Medical Association prepare sets of questions, say twenty or more on each subject, and submit these to the various state examining boards that they might select from among these fairly representative questions those the state board liked best?

This would be a step only towards uniformity. There still remains the great factor of grading the answers submitted by the candidates, and this variation will be as great as the number of individuals marking the papers. There is great need of some sort of uniformity, and any step will be progress from the present chaotic condition.

Eighty-second Commencement Exercises—New York University.—On June 10th, the commencement exercises of New York University will be held in the auditorium at University Heights. All alumni are extended a cordial invitation to be present. Veterinary alumni attending the alumni meeting at 141 West 54th street in the middle of the day will be able to reach the campus easily in time for the commencement exercises.

REPORTS OF CASES.

SIX EXPERIMENTAL CASES OF TETANUS IN CARNIVORA.

By S. S. N. Walsh, D.V.M., St. Louis, Mo.

The object of the following experiments was not to determine the symptomatology of tetanus in the dog or cat, but to determine the effect of a certain line of treatment. These animals were used as controls. The cultures injected were highly toxic and the bacilli were not removed by filtration, the object being to produce the disease as rapidly as possible, with the toxin formed in vitro and to allow the injected organism to reinforce this action with toxin formed in corpore. Taking into consideration the relative immunity of carnivora for tetanus, due to combination of bacteriocidal and phagocytic action, the symptoms produced in these three animals were likely caused entirely by the toxin formed in vitro.

Behring and several other authors consulted, state that the muscles in tetanus are very sensitive. None of these animals showed any pain on palpation even when considerable pressure was put upon the tetanized muscles.

Trismus was not marked in any of these animals, the symptoms were those of the so-called "*tetanus ascendens*" which is the usual type when the disease is produced by inoculation.

Muller and Glass state that in tetanus of the dog there is a rather constant loss of voice; this dog could bark at any and all stages of the disease. The voice of one of the cats was not affected, but that of the other was lost. A short resume of facts about tetanus toxin may be of interest. A bacterial toxin—exotoxin may be defined as a soluble-diffusable, secretory anabolic, thermolabile product of bacterial activity except (true toxins not bacterial), etc., which when injected or otherwise parenterally introduced into a suitable animal call fourth their antibody, *i. e.*, antitoxin. Easily destroyed by light chemicals, etc. Specific in action and never act without an incubation period. It is precipitated by ammonium sulphate. The purest product which has been obtained by precipitation is in the form of fine, yellow flakes which are soluble in water and insoluble in alcohol, and either do not give protein reactions.

Tetanus toxin on standing loses its toxicity, but does not lose its combining power for antitoxin, showing that its toxo-

phore group has been lost, while the haptophore group still remains intact, toxin minus its toxophore group is designated by Erlich toxoid.

An injection of toxoid followed by a lethal dose of toxin produces no symptoms. Twenty-four hours after an injection of toxoid a sublethal dose of toxin is often fatal.

In alligators toxin is neither destroyed nor is it eliminated for some time. Soon after injection it disappears from the blood, but can be demonstrated in the liver and some other organs.

Metschnikoff tried to produce the disease in turtles by elevating the body temperature, but failed. The toxin remained in the blood and no antitoxin was formed. (Demonstrated in blood by its toxicity for white mice.) The photodynamic power of 5 per cent. solution of eosin destroys tetanus toxin in one hour.

It is known generally that tetanus toxin is not the only toxin of the tetanus bacillus which also elaborates tetanolysin. A haemolytic substance which as far as the disease is concerned is of little importance. A protiolytic ferment and acid are also products of the organism.

The following table of Behring may be of interest, showing the relation of the size dose of toxin to the time required for the production of symptoms.

13 Lethal Doses—Symptoms in 36 Hours.
110 Lethal Doses—Symptoms in 24 Hours.
333 Lethal Doses—Symptoms in 20 Hours.
1,300 Lethal Doses—Symptoms in 14 Hours.
3,600 Lethal Doses—Symptoms in 12 Hours.

It is worthy of note that increasing the dose of toxin shortens the incubation period up to a certain point, and past this point the period can not be shortened, *i. e.*, enormous doses always have an incubation period, this appears as if the action might be enzymatic.

Vaughan states that tetanus and diphtheria toxins in themselves are non-poisonous, but that their toxicity is entirely due to enzymatic action, *i. e.*, they split certain protein molecules in the animal body and liberate their poisonous fraction and this fraction produces the symptoms.

Nocard infected three sheep with the tetanus bacilli at the tip of the tail—he introduced the organisms upon splinters. All three sheep were allowed to develop the disease, then the tails of two were amputated close to the rump. *Result.*—All died in

same manner. Spores of B. tetani freed of toxin and aseptically introduced into animals will not produce the disease because of the rapidity with which they are taken up by phogocytes. Spores plus an injury as lactic acid, etc., will produce the disease.

Knorr gives some comparisons of susceptibility of different animals as follows:

One Gm. of horse is destroyed by -x toxin.
One Gm. of goat is destroyed by 2x toxin.
One Gm. of mouse is destroyed by 13x toxin.
One Gm. of rabbit is destroyed by 2,000x toxin.
One Gm. of hen is destroyed by 200,000x toxin.

The great resistance of carnivora for tetanus is common knowledge, but that this resistance is quite likely bacteriocidal



Cat No. I.

and not an immunity which is absolute and protective against both toxin and bacilli are, I think, demonstrated in these three animals.

The inoculation which the dog received would have been without doubt a fatal dose for an herbivorous animal as ox,

horse, sheep or goat and yet it failed to kill this dog—although he had no treatment and no care; he was in a cage with two cats, which were by no means friendly toward him. It is common knowledge as to what the effect of a similar annoyance would be on a horse.

That this resistance is not the same in all carnivora, but varies with the individual, is shown in the cats. In *Cat Number One:* The first symptoms appeared in approximately ninety-two hours; in ninety-eight hours more or in all 100 hours (these figures are rough, but close enough to serve the purpose) the animal was



Cat No. I.

moribund—according to the table of Behring, he had in his system between five and ten times more toxin than would have been required to kill him. Now a striking difference is seen in *Cat Number Two:* This animal showed symptoms at the same time after injection as number one. Seventy-two hours after this, or 120 hours after injection, he was by no means moribund. I greatly regret that I killed the animal at this time, as from his general appearance I believe he would have gone on to recov-

ery. In case number one there is no doubt absolutely but that he would have died of asphyxia during the night had he not been killed.

Judging from these three animals, if one may draw any conclusion from so insignificant a number, I would say that the immunity of carnivora against natural infection with tetanus is purely a bacteriocidal one, and that these animals are no more resistant against the action of the toxin than other animals. This is in accord with the resistance or inherited immunity of the



Cat No. I.—Apparently dead, shows extreme muscular contraction.

dog for most all infectious diseases, the same probably acquired by his forefather, the jackal.

For generations carnivora (wild) have preyed upon each other and eaten of cadavers, dead of various diseases, so that an inherent resistance to most infections has become a part of them; it is a common observation that domestication is causing them to progressively lose this; for example, the common cur who rustles his living from garbage heaps is ever so much more resistant to infection than is the pet house dog.

I think that even these few experiments clearly demonstrate that the immunity of carnivora for tetanus is in no manner similar to that which is possessed by the alligator and turtle.

The why of the immunity of the alligator and turtle? I will not attempt to explain; cold-blooded animals are not all immune, as the disease can be produced in frogs if their temperature is raised to 37.5 degrees C. A frog which I injected died with tetanic symptoms—whether or not these were due to



Dog No. 1.—Taken when tetanus was general.

the surroundings I will not say. (He was put in a jar of water in a small incubator.)

In frogs kept at 20 degrees C., large doses of toxin are without effect; if later the temperature is raised, death occurs. Morgewroth concludes from this that the haptophore group only combines with the nervous system at 20 degrees C., and that at 37.5 degrees C. the toxophore groups unite. That is, the combination of nerve and haptophore does not prevent later addition of toxophore to the combination.

The results obtained on cats numbers 3 and 4, further substantiate the theory that in the previous animals the symptoms produced were due to the toxin injected and not to that formed in the body. Conclusions drawn from so small amount of data are unquestionably insignificant and a source of error; but as far as these two animals are concerned, it clearly demonstrates that injections of bacilli or cultures which contain no active toxin, are unable to produce any noticeable disturbance.



Dog No. II.

Another point which may be absolutely an error, is the fact that after injection of these cats with a broth culture which had been heated to 56 degrees C. for one-half hour, a subsequent injection of more than a lethal dose of toxin was without effect. I say this may be an error because I unfortunately did not control this injection with injection of a white mouse to at least roughly determine the toxicity of the injected material.

Dog number two showed several marked differences from any of the other animals. In the first place he showed evidence of great pain which seemed to be spasmodic in character.

The symptoms came on more gradually and seemed to slowly extend from muscle to muscle. The others where the site of injection was in the thigh in the vicinity of the sciatic nerve, would show symptoms suddenly, and these were in every case confined to the leg infected, at the onset.

In dog number two, the first evidence of the disease was a lateral deviation of the tail toward the injected side; this very gradually and regularly progressed until there was curvature of the entire spine, the convexity was toward non-infected, *i. e.*, the left side.

During the paroxysm of pain it seemed to afford the animal considerable relief to lie upon the left side. This animal was more responsive to stimuli than any of the others and taking of flashlight picture caused general convulsion each time it was done (three times). Neither of other two animals responded to this form of stimulus.

During etherization, in no case in others, was there anything near complete relaxation of all muscles which had been involved; there was in each a relaxation of some muscles, but the extensor muscles of hind legs never approached even normal tonus, much less complete relaxation.

On poisoning dog number two with strychnine, it was found that at intervals between the convulsions there was complete relaxation of all muscles, including the extensor muscles of hind legs. I mention injection of strychnine merely as a matter of possible interest and not because of any particular significance which it may have.

It is generally concluded that the seat of action or better the cells stimulated or paths opened up by tetanus toxin and strychnine are the same. I wished to determine whether these cells already being acted upon by tetanus toxin could also respond to strychnine in a normal manner, which in this case they did. Although being stimulated to the apparent maximum by tetanus toxin, there was still power to respond to the strychnine.

Dog Number One: Puppy, female (breed, common; age, 5 months); general condition, good.

Culture Used: Five-day-old in lactose peptone broth—this culture (2 m.) killed a white rat with tetanic symptoms in twenty-four hours.

Injection: Jan. 7, 1914; injected M. 5 right thigh in region of sciatic nerve. Jan. 8, 1914: Normal, chases ball, playful, etc. Jan. 9, 1914: Extension and tetanus of the muscles of injected leg. Jan. 10, 1914: Tumefaction (slight) in groin on right

side; this extends down into the inner aspect of thigh, is not painful on palpation, the leg is in extreme extension and cannot be forcibly flexed. (No general symptoms.) Jan. 11 and 12, 1914: Rather close observation revealed no appreciable change, no malaise, appetite good, etc., right hind leg rigid, no exaggerated reflexes. Jan. 14: Observation at about 11 a. m. showed general tetanus (this came on within 12 to 14 hours); ears hang over face, corners of mouth retracted, very marked corrugation of forehead; emits a smacking noise at the sight of food; appetite is good and is able to swallow solids.

Movement of jaws are not much influenced—general muscular rigidity. Palpation of any portion of body causes no pain. Marked oedema of leg into which injection was made seen mostly below the hock. While the symptoms were general was never observed lying down.

Slight elevation of the head causes exaggeration of the muscular contractions about the head and the animal falls; a slight push also causes a fall.

There is marked fixation of eyeballs, will bark at strange sounds.

Jan. 14 to Jan. 22, 1914: Not much change; appetite good; some emaciation and atrophy of muscles of injected leg. On about the 14th three flashlight pictures were taken, none of the flashes causing any convulsions in the animal, and at this time a slight tap would produce the well-known general muscular contractions seen in strychnine poisoning and tetanus; why these did not occur with the optic nerve the apparent path I will not attempt to explain.

Jan. 25, 1914: Muscles of fore limbs and retracters of mouth are beginning to relax.

At no time since Jan. 7, 1914, has even forced flexion of infected leg been possible.

The same remaining in a state of rigid extension.

Jan. 26, 1914: Much harder push than that required to cause a fall a few days ago causes no fall. Elevation of head no fall.

Dog Number One: Jan. 28, 1914: General muscular contractions rapidly subsiding. Except infected leg where atrophy is progressive and there is rigid extension. Jan. 31, 1914: General symptoms entirely subsided. Infected leg rigid extension. Feb. 12, 1914: Dog normal, except absolute rigidity of the leg injected, the same in state of extension; forced flexion impossible.

Three weeks before this dog was used for this experiment

a spinal puncture was made (lumbar region) and two or three drops of fluid withdrawn.

No fluid could be withdrawn while the animal was in state of general tetanus (this was not because of bad technique). This fact is mentioned only because it was done, because it probably has no significance whatever; because this same phenomenon is often observed in the normal dog.

March 21, 1914: In last month there has been a proliferative arthritis of the stifle with exostosis about the tibia near the joint; this has resulted in more or less ankylosis of the joint.

The leg is still in state of extreme extension and cannot be flexed; exactly how much of this is now due to the arthritis I am unable to say.

April 8, 1914: Leg is slowly relaxing and animal is beginning to use it; the arthritis has subsided.

Dog Number Two: Animal, male cur; mouse color; weight, 30 pounds; general condition good.

Culture Used: Four-day-old culture of B. tetani in beef infusion peptone broth. *Injection:* March 9, 1914, at 10 p. m. injected two drachms of above culture into muscles of lumbar region on right side of vertebrae. March 10, 1914: No symptoms. March 11, 1914: No symptoms. March 12, 1914: Observed at 1 p. m. showed slight tendency to carry rump to right side, *i. e.,* back curved convexity to the left. Movements of right hind leg slightly restrained. Observation on night of 12th shows slight stiffness of both hind legs. Deviation of tail to right—this is marked; the stiffness of the legs is so slight that a casual observation would detect nothing.

March 13, 1914: Marked deviation of tail to the right; the same is not elevated and remains a little below the horizontal position. Scoliosis with convexity to the left; no tenderness over muscles affected. Animal is in great pain; whines, lies down and looks at lumbar region (no inflammation); locomotion is appreciably affected. Muscles of hind legs tense, more especially the extensors; the legs appear bowed. Pain seems to be paroxysmal and shows desire to lie on side during paroxysm and when observed always lies upon convex side. More or less constant erection of penis.

March 14, 1914: No marked change; slight increase in contraction of affected muscles, and there seems to be gradual involvement of a few more muscles as if the contractions spread by continuity.

March 15. 1914: Mild general tetanus; gait is tilty. Eye has characteristic appearance. Motion of jaws is impaired; can open mouth wide, but to do so seems to be quite an effort.

March 16, 1914: Has almost constant erection of penis. Some retractions of the corners of mouth. Is exceedingly responsive to slight stimuli and easily goes into general convulsions. Taking of flashlight picture on this date caused general muscular spasms.

March 16, 1914: The following may be of interest because of similarity of action of tetanus toxin and strychnine: 9.48 p. m. given subcutaneously strychnine sulphate ¾ gr.; 9.50 was in death spasm which came on in same manner as in horses destroyed by intravenous injections of strychnine; artificial respiration was resorted to; 10 p. m. died; 10.35 p. m. marked rigor mortis.

Just before death there was general muscular relaxation, which also took place between convulsions. This was never complete (relaxation) in animals which had tetanus and were under the influence of ether. Autopsy showed nothing but lesions of death from asphyxia.

Cat Number One: Cat, male, adult; general condition good.

Culture Used: Seven-day-old culture of B. tetani in meat infusion peptone broth.

Injection: Jan. 25, 1914, 10 m. injected into left thigh in region sciatic nerve. Jan. 26, 1914: General appearance normal; jumps normally; refuses food. Jan. 27, 1914: Injected leg extended and rigid. Jan. 28, 1914: Eyes fixed (ears erect); tail erect; lies on sternum with legs extended. Any sudden sound or slight stimulus causes general spasms.

Jan. 29, 1914: General tetanus; opisthotonus; tail erect; legs extended; lies on side, unable to rise or cry; respiration shallow; heart, rapid; pupils react to light; mouth half open, tongue protruded; extension of legs so extreme that volor surfaces of feet cannot be made to touch ground when animal is in standing posture.

Any slight stimulus (touch, noise, etc.) causes general convulsions.

Three flashlight pictures taken and none of the flashes caused the slightest movement of the animal (his eyes were open).

Spinal puncture result no fluid. Post-mortem section of cord no fluid detected.

On night of 29th attempt to etherize resulted in death after three or four inhalations (50 per cent. air) sudden extreme

dyspnoea; mucus appeared in nose and mouth; apnoea; syncope attempts at resuscitation gave no results. This animal was practically moribund at time of etherization.

Post Mortem: Immediately after death there was relaxation of muscles of front legs, neck and tail.

The hind legs remained rigid for one hour when observations were discontinued.

Cat Number Two: Male cat, large adult; condition good. *Culture Used:* Same as for number one, except the tube containing the broth had been exposed to light and under aerobic conditions for twenty-four hours. *Injection:* Jan. 26, 1914, 15 m. injected into thigh, in region of sciatic nerve. Jan. 27, 1914: Normal. Jan. 28, 1914: Morning, injected leg flexed, and movements are difficult; night, leg extended rigid; no general symptoms. Jan. 30, 1914: Shows difficulty in masticating solid food; stroking back causes usual rising of same and tail with synchronous purring. Injected leg rigid extension. Jan. 31, 1914: Unable to rise; hind legs extended; motion of forelegs limited; is very nervous and apprehensive; cries a great deal; jumps at any sudden sound or slight stimulus.

Etherization on night of 31st; was under in less than one minute and during this period struggled very violently. All muscles relaxed, except crural and muscles of ham in both hind legs which, although in not as high a state of contraction as before etherization, they still maintained a much greater tension than normal muscle tonus. Spinal puncture, no fluid.

Etherization continued until death; on dissection of the lumbar cord no fluid was seen.

Large percentages of normal cats and dogs give so-called "dry tap." So above has absolutely no significance as far as the negativity of fluid present is concerned.

Cat Number Three: Half-grown female grey-and-white cat; poorly nourished.

Culture Used: The same tube as was used on dog number one, the same having stood exposed to light since that time (*i. e.*, since Jan. 8, 1914). This was heated before injection to 56 degrees C. for one-half hour. Control culture from this showed many bacilli.

Injection: March 14, 1914: Injected seven minims into muscles of thigh. Showed no symptoms, except a transient stiffness of the leg, which appeared on March 16, 1914, and disappeared in twenty-four hours.

March 16, 1914: The figures to follow are unfortunately

indefinite, as I was confident that I was about to inject enough toxin to kill these cats. B. tetani was grown in 350 c.c. of broth for ten days; the toxin from this was precipitated by means of ammonium sulphate and then dissolved in about 10 c.c. of water; 1.5 c.c. of this solution was injected into the left thigh of this cat in region of sciatic nerve.

It is equally unfortunate that no control on the potency of this toxin was made, as it was destroyed in the autoclave after injection.

To date (*i. e.,* March 21, 1914) this cat has shown no symptoms. The culture was not filtered before precipitation with ammonium sulphate.

March 29, 1914: No symptoms from any bacilli that might have been in the ammonium sulphate precipitation.

Cat Number Four: Animal, half grown, poorly nourished, male cat. *Culture Used:* Same as for cat number three. *Injection:* March 4, 1914: Injection made into muscles and subcutaneous tissue of back. March 16, 1914: No symptoms; was injected with 1.5 c.c. of same solution of toxin as number three. March 21, 1914: Has shown no symptoms.

March 29, 1914: Has shown no symptoms; any that *might* have developed at so late a period would have been due to bacilli in the toxin, as I mentioned already that the culture was precipitated without filtration.

NYMPHOMANIA IN MARE—OOPHORECTOMY FOLLOWED BY RECOVERY—RETURN OF CONDITION AFTER YEAR'S TIME.

By Robert W. Ellis, New York, N. Y.

The subject, a black coach mare suffering from nymphomania, had become so bad a kicker when in harness as to render her dangerous and entirely useless, and she had become very much run down in flesh. Her ovaries, which proved to be cystic, were removed on April 14, 1913; the operation being followed by a rapid restoration to a normal condition, driving nicely single or double, and a return of her former physical condition. In fact, three months after the operation, while working everyday, she carried more flesh than she had carried at any previous time. This satisfactory state of affairs continued until thirteen months

after the date of the operation, when she suddenly showed marked symptoms of estrum, which increased in intensity, and her vicious kicking propensity returned with it. I was naturally very much disappointed, and also somewhat at a loss to account for it, as I believed that with my patient unsexed the estral function and especially the nymphomania and kicking habit, had been eliminated. The facts that relief had followed the operation and continued for thirteen months made the return of this condition especialy hard to account for, to my client, and incidentally to myself.

Dr. H. Fulstow, Norwalk, Ohio, in a paper presented to the American Veterinary Medical Association at Toronto in 1911, and published in the AMERICAN VETERINARY REVIEW of February, 1912 (page 651), puts his subjects into three classes as follows:

"1. Mares that are mean when in heat only, and those that are continuously in heat but do not kick, will be cured by ovariectomy.

"2. Some mares that kick nearly all the time, whether in heat or not, will be cured by the operation. Some others will be benefited, and in some few cases it will do no good.

"3. Old mares that have kicked for years and have contracted the habit, and those that kick all the time when not in heat, but when in heat are gentle, the operation will not benefit at all."

Unfortunately I am not in a position to state with any degree of accuracy in which one of the first two classes my patient belongs, as I do not know whether or not she was continuously in heat or kicked when not in heat before the operation, but only know from the history given that she always kicked in harness under the slightest provocation, such as some part of the harness touching her when brought to a stop after driving. I feel certain she was not in class 3, because the condition had only existed a few months when my attention was called to her, and she was operated upon almost directly afterward. I incline to the belief that she belongs in class 1, because of the fact of her showing symptoms of estrum and the kicking propensity simultaneously in this present relapse. Perhaps Brother Fulstow or some other gentleman who has had experience with this condition and the operative procedure for its relief, will throw some light on my case. Why should the estral function return in a castrated female after being absent thirteen months? Will the removal of the clitoris be of any advantage in this case?

IMPACTION OF THE LARGE INTESTINES.

By W. D. Forsythe, V.S., North Toronto, Ont., Canada.

Having read in different journals many of the forms of treatment for the above mentioned condition, and having treated a great number successfully, I will outline my method, which is as follows: After examining the patient and feeling certain that you have a case of obstruction, give 10 drs. of Barbadoes aloes, pure, that is, to a large horse; then give 1 grain of arecoline and ½ grain of strychnia sulph. Never give more than 1 grain of arecoline at once to any animal; large doses act too severely. I have never used arecoline closer than 30 to 45 minutes between doses. Then give the animal a clyster; endeavor to get the hose inserted well up in bowels, using a stiff hose. I am never afraid of injecting a heavy horse with arecoline when I use the strychnine with it. Do not tap these cases on seeing that they are not coming your way, if you do you will get very little gas.

I am pleased on reading literature, that arecoline is contra-indicated in gastric fermentation. In times gone by I have read so much about it being so serviceable in such cases, but believe that I have killed a few with it, so now I carefully pick my cases. It no doubt should be used cautiously in aged animals; don't like it in cattle practise. Of course, with our typical animal I order walking exercise. By the way, I consider it a waste of time and medicine and a great annoyance to an animal suffering with this disease to drench him at any time with bulky medicines or whiskey. Don't use it; don't mask the symptoms; and as long as you can spend time with your animal, watch him, never use anodynes of any kind, so long as you are looking for good results, I will admit much in this article is old, but it should help some new graduate, and there will be many just at this season.

HOOK WORM DISEASE IN A MULE.

By R. A. Stoute, D.V.S., Government Veterinary Surgeon, Barbadoes, West Indies.

Subject—Gray gelding mule 5 to 6 years old.

History—Imported from Argentina, South America, some months ago.

When purchased the animal was in first-class order and appeared in perfect health. After it was in the Island for a short time it began to lose condition.

Symptoms and Treatment—These I am unable to give, as I did not see the animal.

Post Mortem—My partner, W. H. Thorpe, was visiting the farm when the mule died and found the following conditions: All the organs seemed healthy, although aenimic; blood very thin and watery. Peretonium was covered with fat about half inch in thickness.

Stomach—Contained no worms.

Intestines—The feces in the entire intestinal canal was simply crowded with worms. A tobacco tin of the contents of intestines was brought me in which was found a crowd of "*hook worms*" and a number of "*strongyloides intestinates.*"

Microscopical examination of feces was made by the Government bacteriologist and myself and quite a number of eggs of the hook worms were found.

One naturally asks, to what extent would a case of this kind cause the spread of the disease among humans?

ABSENCE OF LEFT KIDNEY IN DOG.

By Robert W. Ellis, New York, N. Y.

Young French bull dog having died in an epileptic fit was autopsied in search of intestinal parasites as a possible cause of the malady. After removing the entire digestive tube (in which, by the way, our search brought negative results), we took out all of the other organs for inspection, which finally brought us to the kidneys. The right kidney was removed and weighed 40 grammes (1 1/3 drachms), but there was no trace of the left one. The dog was about a year old, and had been my patient when three months old with distemper, at which time he was very much emaciated, but finally filled out and had been a healthy, normal dog up to the time of the sudden appearance of the epileptic fit which resulted in his death.

Automobile Claims Another Veterinarian a Victim.—Dr. Lee Underwood, graduate of the McKillip Veterinary College, practising at Tomah, Wis., was the victim of an automobile accident in March, by his machine turning turtle. He was struck on the head by the overturning of the car, causing a fracture of the skull. He died without regaining consciousness.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Impaction of the Oesophagus [*C. W. Cartwright, M.R.C.V.S.*].—Case of a three-year-old cart mare which, whilst able to swallow, presented symptoms leaving no doubt as to the nature of her trouble. Food would pass the pharynx, but stopped below the parotid, where was a swelling, doughy to the feel. The mare had profuse salivation, roared, had gulping movements and dirty, food-stained discharge from the nostrils. By proper treatment of fomentations, massage, belladona electuary, the animal recovered. However, after some time, the same condition returned and did so several times, when finally the mare's condition grew so critical that operation was decided. With great difficulties and several attempts the oesophagus, after being exposed, was cleaned out of its packing, which extended from the mouth down to the stomach. For some time the mare was fed with rubber tube, but finally the wound healed and recovery was perfect, the animal having regained her condition was able to work. Her recovery was only temporary. After a comparative short time she again had a series of her troubles, until a last one carried her away. Unfortunately no post mortem was made.—(*Vet. News.*)

Ovarian Cyst in a Mare, Spontaneously Discharges; Recovery Follows [*W. Cargill Patrick, F.R.C.V.S.*].—A thoroughbred mare is taken from the turf and sent to the stud. She is not a success. Examination of her generative organs shows nothing particular except a slight difference in the size of the ovaries. Artificial impregnation is followed by good results and she has a foal. Twenty-four hours after she has colic, weak pulse, accelerated breathing, and a temperature of 103 degrees F. Rectal examination revealed her right ovary much enlarged and cystic. Sedatives relieved her. Interference with the ovarian cyst being postponed until foal is weaned. The mare is left alone, but several months after is taken up and on examination the ovary, which was so large before, is now shrunken and adherent to the brim of the pelvis. The report was that one

morning she was found while at grass with a wound close to the udder, from which there was an abundant discharge which lasted several days. The mare had then improved much in condition. She was returned to the Stud.—(*Vet. News.*)

Ruptured Uterus in a Sow [*W. T. D. Broad, M.R.C.V.S.*].—Pedigree sow is farrowing. She has passed a dead pig already with some difficulty. Another is taken away and she is left, being watched. Two hours after a third pig is born. This one is alive and strong. The sow passed all her cleanings, which seemed to form quite a big mass for only three pigs. The animal is quiet, takes her food and walks about. Two days after she dies suddenly.

Post Mortem—Blood, tinged fluid in quantity in the abdomen. With the intestines three pigs without foetal membranes and a fourth lying in contact with the right lobe of the liver. The uterus had a large hole on the under surface and contained a very small portion of foetal membranes.—(*Vet. Record.*)

Abdominal Neoplasm [*Arthur N. Foster, F.R.C.V.S.*].—Concise record of a terrier bitch which two months after giving birth to a litter of three puppies had her abdomen enlarged considerably. Abdominal growth was diagnosed. The bitch was destroyed. There were scattered through the abdomen multiple growths, one of which weighed over 4 pounds. The others, about 20 in number, varied in size from that of a marble to that of an orange. They were myxomata.—(*Vet. News.*)

Unique Accident to a Horse [*Prof. Edmund Burke, D.V.M., Lahora, India*].—The photo that illustrates this report shows the very peculiar aspect of the injury which was received by a six-year-old mare while out for a ride by the owner. Suddenly frightened by a motor car, the mare made a jump, severely knocking the fetlock of the near hind leg and became very lame. She could walk only on three legs, with the injured one flexed and the digital region hanging loosely below. The lower extremity of the large metatarsal bone protruded through a wound in front of the joint. The skin was widely torn, the tendon of the extensor pedis was ruptured and the anterior and lateral ligaments of the joint stripped from the distal extremity of the large metatarsal bone. The injury was probably the result of severe knocking of the fetlock, as there were no abrasions or

other sign of having been knocked against any hard object.—(*Vet. Journ.*)

Some Clinical Cases [*W. R. Davis, M.R.C.V.S.*].—Under this heading the author describes the three concise reports:

1. *Amateur Surgery.* That of a cow which, having tympanitis has been operated by her owner, who made a puncture of the paunch with a pocket-knife and introduced in the hole "a cigarette holder." This had gone between the skin and rumen and the gases escaping through the slit had gven rise to subcutaneous emphysema extending from the poll to the buttocks of the cow. A proper puncture was then made by the writer, the canula of the trocar left in place and the next day the cow was chewing her cud. It took several days for the sub-cutaneous emphysema to pass away.

2. *Distension of Urinary Bladder in a Cat.* One day the cat is ill, refuses food, vomits and has her bladder greatly distended. It is tapped in front of the pubis, a pint of reddish urine is removed. Two days after the cat goes home. Six weeks later same condition returns with same treatment and results. A third interference was also required. What was the cause could not be made out—owner refusing laparotomy to be performed.

3. *Snoring in Cows.* A cow roars very loudly. She had to be tracheotomized to be relieved, a permanent tube was introduced. Three months later she is sold to a butcher. The larynx, a part of the trachea with tube in place are sent to the writer, who finds the mucous membrane replaced by granulation tissue with caseating patches. Vocal cords have disappeared. Arytenoid cartilages were enormous and affected with amyloid degeneration. One laryngeal lymph gland was tuberculous.—(*Vet. News.*)

Mitral Disease in the Horse [*Horace L. Roberts, F.R.C.V.S.*].—Records of the history of three cases of mitral disease, manifestations, observed in a five-year-old gelding, in another rising four and a third in a six-year-old pedigree Shire mare. The symptoms are described and the successful treatment given consisted in the administration of strophanthus, which, the author says, "in conjunction with good hygiene and abundance of fresh air seems to be preferable to digitalis, whose long repeated doses might have an injurious effect upon an already weakened system.—(*Vet. News.*)

Treatment of Contagious Abortion With "Bissulin" [*E. C. Winter, F.R.C.V.S.*].—This bissulin is a non-irritant, germicide and antacid compound made up of different fats and containing 25 per cent. of strong sozojodol mercury. It has been used by the writer in several instances and is highly recommended by him and others in cases of outbreaks of contagious abortion. Three special cases are reported. In a herd of 22 cows, where 12 have aborted, the treatment was begun and within twenty-four hours the disease stopped. In a second, there were 18 cows, six have aborted, seventeen received the treatment. The last one did not get it and aborted, the others were saved. In a third case, out of 30 cows where ten had aborted. The disease was there brought in by a diseased bull. The author tried bissulin also in mares that had vaginitis and obtained very good results.—(*Vet. Record.*)

Fatty Degeneration of the Kidneys in Cat [*E. Wallis Hoare, F.R.C.V.S.*].—Three-year-old Persian cat has the following history. Had persistent diarrhoea, which was checked and recurred. Appetite capricious. Constipation, vomiting and thirst. Emaciation proceeded very rapidly. On palpation kidneys feel enlarged, specially the right. Micturition involuntary. Staggering walk. Animal is destroyed. Post mortem showed lesions of acute enteritis. Kidneys are enlarged, of deep yellow color, as if bile-stained. Their surface was smooth and covered with numerous dilated veins. Fatty degeneration is plainly observed in sections which were anemic and unctuous. No macroscopic distinction between the cortical and medullary portion can be observed. Large mass of fat surrounded them. The author asks, was the enteritis primary or secondary? Or was it a case of slow phosphorus poisoning?—(*Vet. News.*)

FRENCH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Rectal and Intestinal Coprostasis in Dogs [*D. Bonnigal*].—Quite frequent in old subjects it is easily recognized and generally relieved by oily rectal injections and laxative diet. Yet there are exceptional cases.

One small bull, after the rectal evacuation is obtained, reveals yet by abdominal palpation the presence of a hard sub-

stance in the last portion of the colon. The ordinary manipulations with the fingers are not advisable, for fear of laceration. However, by holding the mass steady with the fingers of the left hand, it was possible to introduce a blunt probe and with it break up the obstruction. Enemas of oil completed the cure.

In another, a large dog which has constipation since several days, the rectum is filled with concreted mass, which makes the anus protrude and forms a tumor as big as an egg. The mass was removed after being crushed and the ordinary treatment prescribed. Three days after, another large stercoral mass is in the rectum and extracted. There is still some in the colon. No operation is possible owing to the condition of the dog, which dies on the nineteenth day.

At the post mortem the last portion of the colon was found blocked with a mass measuring 20 centim. in length and 5 in diameter.—(*Presse Vet.*)

Melanotic Tumor of the Shoulder [*L. Rossignol*].—Reported at the *Soc. Veter. Pratique,* the case was that of a light grey stallion, in good condition, which had a swelling on the left shoulder. Astringent lotions relieved him after a few days. The swelling however returned and assumed the characters of cold abscess. Blisters were applied and several points of firing were followed by septic infection, which was controled with tincture of iodine. Improvement took place and the growth began to diminish when an attack of colic killed the horse in a few hours. At the post mortem a general melanosis was found, of which the trouble at the shoulder was but a manifestation. The muscles mastoido-humeralis, posteaspinatus, abductors of the arm were involved and the melanotic neoplasm was lodged under the scapula. In the abdomen, the stomach and large colon were many melanotic tumors of various sizes. There was one in the spleen that weighed 19 kilogs. The liver and the thoracic organs were healthy.—(*Bullet. de la Soc.*)

Sudden Death and Thoracic Exudations in Cat [*MM. Lasserre and Lesbouyries*].—Two new observations are added by the authors to those already recorded.

1. *Tuberculosis Pleurisy.*—One-year-old black cat is sick since a few days. Percussion and auscultation of the chest justify a diagnosis of pleurisy. The temperature is about being taken when the animal struggles violently and suddenly dies. Before making the autopsy the pleuretic exudate is removed

with a trocar. As the cat is open, the lungs, principally the left, are covered with tuberculous deposits. In the abdomen the mesenteric glands are also diseased.

2. *Pyo-Pneumo-Thorax.*—Three-months-old grey cat does not eat since three days. Percussion of the chest reveals double dullness, and ausculation shows on the right side a gurgling noise. Then suddenly, as the examination is continued, the cat dies suddenly. Post mortem: Fluid in both pleural sacs, more abundant on the right, where it is purulent. Left lung is normal, but the right covered with false membranes, which make it adhere to the parietal pleura. There are also few nodules and more abscesses communicating with the pleural sacs. No bacilli of Koch present.—(*Rev. Veter.*)

Mischiefs of Distemper Abscess [*Major Prevost, Army Veter.*].—Four-year-old mare, recently in the ranks, and with history that she has had distemper, passed blood from the anus. Bedding and side bars of the stall are covered with blood. The animal is depressed, with pulse small and imperceptible and visible mucous pale. The genitals are free from excoriation, the brim of the anus covered with blood but having no wounds. Rectal injections bring out hard and blackish balls of manure. Examination of the rectum shows the organ very warm but without indication of traumas. During the same night the mare dies. Opening of the abdomen allows the escape of some reddish serosity. Peritoneum is inflamed. Colic and coecal lymph glands are hypertrophied. Great mesenteric vein is gorged with blood. Mesentery congested. An abscess as big as a child's head is located at the right perirenal region—pressing gradually on the portal vein, which it has pushed aside, and gives rise to a hemorrhage of the large colon on a level with the diaphragmatic curvature. Examination of the pus had shown the streptococcus of Schutz.—(*Bullet. Soc. Centrale.*)

Intoxication by Tobacco Juice [*Major Maire, Army Veter.*].—A horse was reported as dying with colic. He is greatly prostrated, covered with cold sweats; he has muscular shiverings, profuse salivation, accelerated respiration, staggering walk, infiltrated conjunctive, membrana nictitans protruding and pupil largely contracted.

The history of the case was that the horse had been rubbed an hour before with a solution of tobacco juice. Diagnosis is all indicated.

Treatment: Bleeding of 4 kilogs., alcoholic infusion of coffee, sub-cutaneous injection of pilocarpine. Improvement manifested itself two hours after and complete recovery followed the next day.—(*Journ. de Zootechnic.*)

Intestinal Obstruction in Dog—Recovery [*A. Marlot*].—Notwithstanding repeated rectal injections, a dog five years old has obstinate constipation. He refuses all food, has colics, and made unsuccessful efforts to defecate. He is in great prostration, breath fetid, pulse quick and small, there is high fever. Abdomen is painful on pressure, and the presence of an oblong tumor, a little moveable, as big as the fist and hard as a stone is revealed by palpation. An injection of oil is pushed in the rectum and then in the organ is introduced a long, flexible probe, made with a piece of wire which is bent in a loop at one extremity. The bend is six centimeters long and two wide. With this probe the obstruction is gradually broken up and removed piece by piece. Cafeine, castor-oil and enemas completed the recovery.—(*Repertoire Vet.*)

Extra-uterine Gestation in a Sow [*M. Jacquot*].—Sow has four little ones at term and as a consequence of the expulsive efforts has a vaginal and uterine prolapsus. Of the four little pigs, three were alive and one dead. The prolapsus involved the body and horns of the uterus. Reduction was attempted but, on fearing a laceration, amputation was advised and performed in the usual way by an elastic ligature. While the reduction of the stump two living foetus were detected within the abdomen cavity. At that time the sow was in such condition that she was killed for butcher purpose. At the post mortem there were found in the abdomen two sacs of unequal dimesions. The largest contained two foetuses, united by their ventral surface and with only one umbilical cord which divided to go to the ombilic of each foetus. The smallest pouch contained one foetus less developed. The two pouches had their own membranes, they were not adherent to the peritoneal serum, and had a closed connection with the oviducts.—(*Rec. de Med. Vet.*)

Illinois State Veterinary Medical Association. The midsummer meeting of this active veterinary organization will be held at Springfield, July 15.

CORRESPONDENCE.

PITTSBURG, PA., May 13, 1914.

Editor, AMERICAN VETERINARY REVIEW, *New York City:*

Dear Sir—I am enclosing copy of the letter which you asked for in your letter of the 12th inst. This letter was written, as you will notice, the 27th of March. In it I review Dr. Gilyard's method of treating a case of impaction of the caecum, and point out where I think that it is at fault. I also give a supplementary treatment which I think is to be added to the Doctor's treatment if there is to be any hopes of ultimate success.

Since writing the enclosed, the April REVIEW was published, giving a report of a case treated unsuccessfully by Dr. Gilyard, and by a perusal of this case report you will find that he failed at precisely the point that I predicted the treatment would fail, and my letter, which you published last month calls attention to this fact.

Hoping that this letter will serve to clear up my viewpoint, I am

Yours very truly,

A. C. WIGHT, D.V.M.

PITTSBURG, PA., March 27, 1914.

Editor, AMERICAN VETERINARY REVIEW, *New York:*

I read with interest Dr. Gilyards paper on Impaction of the caecum, and it has prompted me to make some observations which are, I am afraid, mostly destructive in nature rather than constructive.

To begin with, the walls of the caecum are relatively weak. That is, the walls are not designed to handle heavy masses of food, the normal content which they handle being only a small amount of fluid material. Now let us imagine an impaction as having just occurred. This means that a large amount of ma-

AN EXPLANATION.—The correspondence from Dr. Wight under date of March 27, 1914, was sent us prior to the one published in our May issue, page 247, but in some way failed to reach us. So we published the second letter alone, when it should have been preceded by the letter of March 27, 1914, as Dr. Wight explains in the above letter, under date of May 13, 1914.—[EDITOR.]

terial, about seven or eight gallons, is in the caecum. Efforts are made by the organ to exclude this material. To do this it must elevate at least some of it two or three feet to the base and then eject it through a slit-like opening into the great colon. This it is unable to do—otherwise there would be no impaction. The presence of this material stimulates muscular contractions which, as they persist, become feebler and feebler until there supervenes a condition of stasis in which the muscles are relaxed and flacid. The pressure of the material impedes the circulation, and a passive congestion of the walls takes place. This all means that there has been a loss of *tonus* of the muscle. Now, one of the main things essential to muscular contraction is *tonus*. Without it nerve stimulation would not produce contraction any more than opening the throttle of a "cold" locomotive could cause it to move.

This all simplified means to me that we have an equation of pressure = loss of *tonus* + passive congestion, or, in other words, loss of function. Therefore, to solve the equation we have to solve for pressure, and then that will be the cure, but any treatment which does not as its first essential remove pressure and remove it permanently, is foredoomed to failure.

Drugs which stimulate peristalsis can give no relief, as we are dealing with an organ already stimulated to the limit of its ability to respond. Food material from the small intestines cannot be forced against this mass in an effort to make it move, as the food lies in a giant cul-de-sac, and the other material passes directly from one valve to the other, a matter of only about two inches.

Drugs which cause a large amount of fluid to be thrown into the bowels, causing the contents to become very liquid, can have no effect as the fluid passes from one valve to the other as before stated. In one case we had, there was a very fluid diarrhoea during the whole course of the disease.

Mechanical means remain to be considered. Let us apply the method proposed by Dr. Gilyard, and endeavor to remove the contents by filling the whole bowel cavity with water. The caecum is already filled to capacity, so very little water would pass into it, but the largest part would cause a slight disturbance at the free part between the two valves, perhaps removing the soluble material at that point, but not touching the great amount of insoluble material lying below.

Let us give this method up and insert a trocar, and then at-

tach a tube and pump and by this method remove the obstruction if possible. Granting that this has been done, we still find the caecum filled—this time with water. Our old bug-a-boo, the pressure, is still with us, and as our equation we still have atony and loss of function with us.

At this time it is best that we refer to an analogous condition in the ox, atony of the fore stomach. Referring to the accepted treatment of this condition by means of the trocar we find that the ox, or usually it is a calf, is laid on its side and the water which has filled the stomach is allowed to run out through the trocar, or the fore stomach is massaged until most of the water has entered the other compartments. Thus it is seen that the pressure, present here and doing the damage as in the horse, is removed, and this allows the return of the circulation to normal and allows the muscular wall to regain their *tonus*. The refilling of the stomach is easily prevented by refusing food or drink until the stomach is capable of again handling it normally.

Referring again to the horse, we see that our work is useless unless we devise some means of removing the water from the caecum, and keeping it empty, or nearly so, until the walls of the organ regain their normal condition, which would be a matter of days, to say the least. This might possibly be done in a very small animal in thin flesh by turning him on his back and kneading the abdomen thoroughly several times a day. In a large animal in good flesh some venturesome spirit might try inserting a trocar into the apex of the caecum and thus removing the fluid. The trouble with the horse is that we cannot so easily control what passes into the organ from the time we once get it empty until it can handle material itself, as we can in the ox, as the vast length of the small intestines will drain into this flabby sac and fill it right up again. In the ox, if the animal does not eat, nothing at all gets into the fore stomach.

As a resume, I would suggest as a treatment that the caecum be emptied by means of the trocar, if possible, and then all the water be drawn off, either by massage or by tapping through the ventral surface of the abdomen, and that in conjunction with this that a drug be given which will reduce intestinal secretions to a minimum for at least 48 hours, after which the usual intestinal stimulents be used. If the animal does not die of the impaction itself the treatment may kill him, but I cannot see any other method by which there can be promised any relief from the pressure on the walls of the organ and the attending disasterous sequelae.

Yours very truly,

A. C. Wright, D.V.M.

Greenville, Miss., May 12, 1914.

The American Veterinary Review, *New York, N. Y.:*

Dear Sirs—There was held at Jackson, Miss., on May 11, 1914, the most successful and interesting veterinary meeting that was ever held in this state. Over forty (40) members were present, and twelve (12) new members were elected to membership in the association. Three members were elected to the first State Veterinary Examining Board of Mississippi. The election of officers of the association for the coming year were as follows: Dr. J. A. Beavers, of Canton, president; Dr. W. L. Gates, of Clarkesdale, vice-president; Dr. J. D. Townsend, of Louisville, secretary and treasurer; Drs. John Oliver, W. R. Edwards and O. M. Norton, executive committee.

The newly elected Board of Veterinary Examiners met and selected Dr. O. M. Norton, of Greenville, as president; Dr. James Lewis, of Greenwood, vice-president; Dr. W. P. Ferguson, of Grenada, secretary and treasurer. A regular meeting of the board for the examination of candidates for the practice of veterinary medicine and dentistry will be held at Jackson, Miss., on June 19, 1914.

Yours truly,

O. M. Norton.

Albany, N. Y., April 30, 1914.

Editors, American Veterinary Review, *New York City:*

A couple of rather unusual instances in connection with breeding animals have come to my notice, which I thought might be of interest to breeders and stockmen, and will be glad to have you give them space in your valuable journal.

When visiting the Haggins Farms at Lexington, Ky., last fall, I saw that beautiful Jersey sire, "Noble of Oakland," age 6 years, and learned from the records that this bull had 460 *successful services* to his credit during the season of 1912.

*
* *

When attending the New York State Breeders' Association meeting, February 5, 1914, I met Mr. Darien Rumsey, of Tompkins County, N. Y., and he advised me that he had a pure bred Percheron mare that had then dropped 2 foals and 5 fillies, all

of which are living normal animals, and that the mother is again bred, the service appearing to be successful. This mare was 9 years old April 15, 1914.

Very truly yours,

J. F. DeVine.

Tyler, Minn., May 9, 1914.

Editors, American Veterinary Review, *New York:*

I am a subscriber to " Maanedsskrift for Dyrlager," a Danish semi-monthly veterinary paper, and the following report for the year 1911 may be of interest for publication.

Animal diseases transmitted to humans in Denmark during the year 1911:

Actinomycosis, 3 cases, all fatal (only ones reported).

Anthrax, 12 cases, all were people assisting in the killing. One case was accompanied by general infection, but recovered; one case proved fatal.

Foot and Mouth Diseases, 3 cases in children appearing as vesicular stomatitis with discolorations of gingivas.

Cow Pox, one case.

Transmission of Tricophytina and similar diseases, mostly from cattle and especially from calves, were reported from all parts of the country.

Respectfully,

H. Rasmussen, D.V.M.

Chicago, Ill., May 12, 1914.

Editors, American Veterinary Review, *New York:*

At a special meeting of the Executive Committee of this association at Chicago, May 6, 1914, following resolution was passed and ordered transmitted to all live stock and farm papers on our mailing list:

Resolution to Farm Papers.

" That it is recognized no drug or drugs have yet been discovered which are specific for the cure of hog cholera.

" Therefore, this association respectfully requests agricultural papers to refrain from advertising such so-called cures."

This is in line with a nation-wide campaign we have started

against impure and improperly manufactured hog cholera serum and so-called drug and chemical hog cholera remedies.

If you join forces with us in this campaign it may cost you a little money in the way of lost advertising contracts, but such loss will be more than compensated for in the knowledge that you are protecting the health of swine on the farm and the best interests of their owners. Yours very truly,

J. J. Ferguson, Secretary-Treasurer.

Veterinarian Olaf Schwarzkopf Goes to the Border. —In a recent letter from our esteemed friend and collaborator, Veterinarian Olaf Schwarzkopf, 3d cavalry, instructor at the mounted service school at Fort Riley, Kansas, we learn that the mounted service school is closed on account of threatened war, and that the doctor is leaving for the border to guard the Rio Grande. We sincerely hope that neither he nor any of our colleagues in the service suffer any undue hardship should hostilities eventually begin.

Veteran Ambulance Horse Receives Blue Ribbon from New York Road Drivers' Association.—On May 2, Mr. Wolf, president of the New York Road Drivers' Association, paid a high tribute to "Duke," the aged sorrel horse, who for nine years has drawn the ambulance of the Washington Heights (New York City) Hospital, and on concluding, pinned a blue ribbon to his bridle. "Duke" attracted especial public notice and admiration during the recent heavy snowfalls in February by performing his duties when all motor ambulances were useless. During one of those days when the weather conditions were at their worst (so bad that the fire apparatuses could not be moved, and firemen went at least to one fire by subway train service) "Duke" made four trips with his ambulance to Inwood Hill, a distance of two and a half miles each way, each trip, climbing a steep hill half a mile in length each time. Although Mr. Wolf knew and admired "Duke" previously, it was those recent achievements, in which he demonstrated the greater reliability of the horse over mechanical apparatus, that actuated him into having that faithful old horse with his ambulance brought before the judges' stand on the occasion of the road drivers' parade that he might publicly demonstrate his recognition of merit.

OBITUARY.

EGBERT LE FEVRE, B.A., M.D.

Dr. Egbert Le Fevre, died the end of March at the age of fifty-five, at the summit of his medical achievement. He received his medical degree thirty-one years ago at the age of 24 years, and at the age of 30 years he was made a lecturer in the New York University Medical College and never ceased to teach from that time, having been dean of the medical school since 1887. Dr. Le Fevre was a man once seen always remembered, and once known, always loved. His generosity knew no bounds. He always was ready to put himself aside in the interest of another, and his students adored him and eagerly listened to his words of wisdom. His personality was most striking; a giant in stature, full bearded, and possessed of that gentleness and modesty that characterizes greatness. While his duties in the medical school precluded the possibility of his following up the general practice of medicine, he was constantly sought in consultation, and would never refuse a call from anyone that he thought needed him, and from whom he would collect no fee for his services.

Dr. Le Fevre fully appreciated the value of veterinary medicine, and was always much interested in the veterinary school and veterinary students of New York University. His towering form will be missed on the campus at the commencement exercises this month, and his absence leaves a terrible vacancy in the medical faculty.

CHARLES JAMIESON, D.V.S.

Dr. Charles Jamieson died at his home in Brooklyn, N. Y., the middle of May, 1914. Dr. Jamieson, who was about fifty years old, graduated from the American Veterinary College in 1889, and immediately began general practice in that portion of Brooklyn called East New York. Quiet and unassuming, and always attentive to his work, he built up a nice practice, which he retained up to the time of his death. Dr. Jamieson was a member of the New York State Veterinary Medical Society and of the Veterinary Medical Association of New York City; both of which he attended pretty regularly. His health had not been good for a year or two. He leaves a family.

SOCIETY MEETINGS.

MISSISSIPPI STATE VETERINARY MEDICAL ASSOCIATION.

The eighth annual meeting of the M. S. V. M. A. was held in Jackson, Miss., at the Court House May 11, 1914. The meeting was called to order by the president, Dr. B. M. Leigh, at 9.30 a. m.

The following members responded to the roll call: Dr. B. M. Leigh, Dr. Oliver, Dr. Brock, Dr. Lewis, Dr. Heiney, Dr. Townsend, Dr. Norton, Dr. Beavers, Dr. Smith, Dr. Keller, Dr. Chadwick and Dr. Edwards.

The minutes of the last meeting were read and approved.

Dr. Oliver moved that business be suspended, so that the election of officers might take place. The following officers were elected: Dr. J. A. Beavers, Canton, Miss., president; Dr. W. L. Gates, Clarksdale, Miss., vice-president; Dr. J. D. Townsend, Louisville, Miss., secretary and treasurer.

On motion of Dr. Oliver the election of officers for the examining board was declared in order. Those appointed by the Governor were: Dr. Wm. P. Ferguson, Grenada, Miss.; Dr. O. M. Norton, Greenville, Miss. Those appointed by the association were: Dr. E. M. Ranck, state veterinarian, A. & M. College, Miss.; Dr. John Oliver, Columbus, Miss.; Dr. Lewis, Hattiesburg, Miss.

The executive committee reported favorably on the following applications for membership in the association: Dr. Frank Hecker, Dr. S. E. Osborn, Dr. Frank Henry, Dr. E. S. Norton, Dr. Wm. L. Gates, Dr. Wm. J. Hossley, Dr. Sim. J. Horne, Dr. T. B. Lee, Dr. E. C. Riddell, Dr. Geo. P. Sand, Dr. W. O. Ney, Dr. J. F. Barnett. The association voted favorably on these gentlemen, and they were declared members of the association.

A contribution was taken for funds to help defray expenses of the A. V. M. A. at the next meeting in New Orleans in December, which was responded to liberally by all present.

After the business session was over, Hon. Swep. Taylor, mayor of Jackson, delivered an address of welcome to the association which was brilliantly given and enjoyed by every one present. The mayor's address was responded to by Dr. Leigh and Dr. Ranck, thanking him for his many kindly remarks.

The state veterinarian, Dr. E. M. Ranck, called for a report from the assistant state veterinarians of their work in the past year, which showed a rapid improvement in conditions general over the state.

After a number of interesting discussions by the several different members of the association, the meeting adjourned to meet in Vicksburg. Time to be announced later.

J. D. Townsend, M.D.C., Secretary and Treasurer.

An Act Regulating the Practice of Veterinary Surgery, Medicine and Dentistry in Mississippi.

Be it enacted by the Legislature of the State of Mississippi:

Section 1. That no person shall practice veterinary medicine or veterinary surgery in any of their departments, including veterinary dentistry, within this state, unless and until such person shall have complied in all respects with the provisions of this act.

Section 2. That there shall be a Board known as the State Board of Veterinary Examiners, composed of five members, who shall serve as follows: Two for two years, two for three years and one for four years. Said Board shall be selected as follows: The Governor of the State shall appoint two of said Board, and the State Veterinary Medical Association shall select three of said Board. All vacancies caused by death, resignation or removal shall be filled by the Mississippi State Veterinary Medical Association. No one can serve as a member of said Board unless he is a licensed or graduate veterinarian.

Section 3. There shall be no obligation on the part of the State of Mississippi for the payment of any money as salary or otherwise to any member of said Board, but the compensation and expenses of said Board shall be paid out of the fees and fines as hereinafter provided for. The members of said Board shall receive as compensation for their services the sum of five dollars per day for every day in actual service of the Board, and in addition thereto their actual expenses incident to the meeting of said Board. Provided, however, the said fines and fees collected under this act shall be sufficient to pay all expenses and salaries. If said fines and fees are not sufficient then the amount collected shall be pro rated among the members of said Board, after first paying the expenses of said Board.

Section 4. To provide that no person in Mississippi shall append to his name any initial or title implying qualifications of or assume or use the title of veterinarian, veterinary surgery or dentist, unless such degree has been conferred by a recognized veterinary college at the time this act is passed, and he or she shall have received a license or permit from the State Board of Examiners to practice.

Persons in Mississippi holding diplomas from a reputable veterinary college at the time this act is passed shall not be required to take the examination, but may be registered upon the payment of a fee of $2, and upon their submitting their diplomas to the Board for their examination. All others shall be required to take the Board examination and to pay a fee of $10 to the said Board when applying for license. Which said fee of $10 shall not be returned to said applicant whether he passed said examination or not.

Persons having practiced veterinary medicine in Mississippi as a means of livelihood for two years immediately preceding the passage of this act are permitted to continue in practice when registering.

Section 5. The Board shall elect from their members a Secretary, and any one wishing to stand the examination for license to practice veterinary

medicine or dentistry shall make application to said Secretary. The regular meetings of said Board shall be held on the third Tuesday in June of each year in the city of Jackson, Miss., when all examinations for license shall be held. All examinations shall be held under the rules and regulations to be adopted by the Board. If the applicant is found worthy and competent by the Board it shall issue to him a certificate of license to practice veterinary medicine, surgery and dentistry in this State. The Board may grant a certificate or temporary license to any applicant applying before the time of the regular meeting of the Board, provided said application is accompanied by the application fee of $10, said applicant furnishing satisfactory evidence that he possesses the necessary qualifications. Said temporary license shall entitle the holder thereof to practice until the next regular meeting of said Board when he may appear and take the regular examination. And it is further provided that the applicants examined and licensed by a reputable State Board of Veterinary Medical Examiners of other States, and holding a diploma from a recognized veterinary college and on payment of a fee of $10, and filing with said Board a copy of said license certified by the President and Secretary of said Board of such other State, shall, without further examination by the Board of this State, receive a license to practice veterinary medicine, surgery or dentistry.

Section 6. That any person desiring to practice veterinary medicine, surgery or dentistry in this State, shall make application for license to said Secretary of said Board of Examiners upon blanks furnished him by said Secretary for such purpose.

Any person receiving a license from said Board shall forthwith have same recorded in the office of the Circuit Clerk of the County in which he intends to practice, or makes his home.

Section 7. The Circuit Clerk of each County shall keep a complete list of the licenses recorded by him, together with the date of each and the date recorded. He shall further record the name of the veterinary college which conferred the diploma on which the license is based and the dates when such diploma was conferred.

Section 8. The Board shall have the right and power to revoke any license upon evidence that same was procured by fraud or that the holder of the license has been guilty of unprofessional or dishonorable conduct.

Section 9. Any person who practices or attempts to practice veterinary medicine, surgery or dentistry in this State without first having complied with all the provisions of this act shall for each and every offense be guilty of a misdemeanor and upon conviction thereof shall be fined not less than twenty-five dollars or more than two hundred dollars.

Section 10. Any person shall be regarded as practicing veterinary medicine, surgery or dentistry who shall treat, operate on or prescribe for any domesticated animal for which he receives compensation directly or indirectly. But nothing in this act shall prohibit any one from dehorning, castrating or spaying without a license.

Section 11. The Grand Jury of each County in this State is hereby given inquisitorial power over all offenses against or in violation of this act and the Circuit Judges of the State shall give the same in their charges to the Grand Juries.

This act shall be in force and effect from and after its passage.

RESOLUTIONS PASSED AT A SPECIAL SESSION OF THE EXECUTIVE COMMITTEE OF THE U. S. LIVE STOCK SANITARY ASSOCIATION AT CHICAGO, MAY 6, 1914.

Whereas, Hog cholera gives promise of being extremely prevalent during the coming season; and

WHEREAS, Reliable hog cholera serum as produced under the Dorset-McBride-Niles system is of great value in controlling and suppressing the disease;

WHEREAS, It has come to the knowledge of this Committee that many hog cholera serum plants are in operation in various States, which plants are not licensed by the United States Department of Agriculture nor under Federal or State supervision;

WHEREAS, We believe there is much serum being placed upon the market which may be absolutely unreliable and a detriment to hogs upon which it is used;

WHEREAS, Attention has been further directed to the placing on the market of fictitious serum, which in some cases is known not to have contained any animal serum;

THEREFORE BE IT RESOLVED THAT, All State authorities be advised to adopt regulations whereby all hog cholera serum plants may be inspected and their products supervised as herewith recommended, and when so supervised their products recommended as consistently as may be deemed advisable by State official;

They shall maintain entirely separate equipment for the handling of serum and virus; and

All equipment, containers, machinery, instruments and other apparatus used in the preparation of viruses and serums shall be thoroughly sterilized before use by live steam at a temperature of at least 120 degrees centigrade for not less than half an hour, or exposed to dry heat of at least 160 degrees centigrade for at least one hour. If for any reason such sterilization cannot be applied, then a process known to be equally efficacious in destroying micro-organisms may be substituted.

They shall keep separate temperature and number records of all hogs entering into the manufacture of serum and virus and the testing of serum;

All premises used for the production and testing of serum or virus shall be properly ventilated, lighted and maintained in a sanitary condition, so located as to avoid the spread of the disease and with suitable arrangements for the disposal of refuse.

All products shall be stored in a cold chamber or refrigerator for preservation until such time as they are removed from the premises.

Virus used for simultaneous treatment must be collected only from hogs which are inoculated by the establishment.

The temperature of supposedly virus hogs should not be accepted as proof of hog cholera unless supported by postmortem examination.

The indiscriminate distribution and sale of virus should be prohibited and its use limited to graduate veterinarians who have had special training in the proper and careful use of virulent blood, and duly authorized to use the same.

Each container should show the firm name of the manufacturer and true name of product and date of manufacture.

The simultaneous method should be used only in infected localities, except in cases of recorded breeding herds and then only under direction of State officials.

The importation of hogs be prohibited unless accompanied by a certificate of health issued by a duly accredited veterinarian certifying that such hog is from an uninfected territory or in case of vaccinated hogs that the same have received the serum-virus treatment at least 30 days prior to entry and the animal dipped immediately prior to shipment in a compound solution of cresol, according to Government requirements.

The State authorities make arrangements with their respective State veterinary associations with a view to their adopting a schedule of fees covering the work of vaccination.

The operation of serum plants be under the direct supervision of a competent veterinarian or other professional man whose training and experience have fitted him for this work.

S. H. Ward, President,
John J. Ferguson, Sec'y-Treas.,
C. M. Haring,
F. S. Brooks,
V. A. Moore,
C. H. Stange,
E. R. Forbes,
Executive Committee.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of the M. V. M. A. was held at the Bangor House, Bangor, April 8th. The meeting was called to order at 8.15 p. m. by the president, Dr. Jervis.

Roll call: Drs. C. L. Blakely; F. W. Boland; W. H. Corey; C. F. Dwinal; R. E. Freeman; F. W. Huntington; H. B. F. Jervis; A. Joly; W. H. Lynch; M. E. Maddocks; A. L. Murch; J. A. Ness; B. L. Pratt; W. H. Robinson; F. L. Russell; E. E. Russell; C. L. Ryan; I. L. Salley; H. L. Stevens; H. B. Wescott.

The report of the January meeting was read and accepted.

Dr. Jervis appointed Drs. C. L. Blakely and W. H. Lynch a committee to draw up resolutions on the death of Dr. C. H. McGillicuddy, of Bath, who died January 24, 1914. This committee reported later in the evening and their resolutions were adopted by the association. Dr. Lynch made a motion that a committee be appointed to draw up some resolutions endorsing the office of Live Stock Inspector, this was seconded, and Dr. Jervis appointed Drs. Lynch, Ness and Blakely to serve on this committee. The committee reported later, but as this report was not handed to the secretary he is unable to report it.

Dr. J. A. Ness read a paper on "*Breeding Draft Horses in Maine.*" This paper was very interesting and brought forth much discussion. Dr. A. Joly read a paper on the "*Live Stock Industry in Maine;**" it was interesting and was discussed freely. Dr. Jervis gave a short talk on *Meat Inspection.*

It was voted to hold the next meeting at Houlton, July 3 and 4.

H. B. WESCOTT, Secretary.

Whereas, In the passing of Dr. Charles H. McGillicuddy from our Association and beyond our mortal sight, we are again reminded of the uncertainty of life, and the certainty of the day coming in which we shall all lay down our tasks, at whatever stage of completeness or incompleteness they may be.

Therefore be it resolved, That we mourn the early death of Doctor McGillicuddy as a useful member of society, a factor in the well being of his community, a valued member of his profession, always having the interests of the Association at heart when failing health often detained him from the meetings, still keeping as much in touch with us as was possible to the end.

Resolved, That the members of the Maine Veterinary Medical Association and those to whom his qualifications were best known and appreciated, offer this sincere tribute of deepest regard to the memory of the days when Dr. McGillicuddy shared our interests and our efforts.

Resolved, That we tender to his family our heartfelt condolence in their great loss, and be it further resolved that a copy of these resolutions be sent to them; and another copy be spread upon our records; a copy to the AMERICAN VETERINARY REVIEW and one to the Chicago *Veterinarian.*

W. H. LYNCH, D.V.S.,
C. L. BLAKELY, M.D.V.,
Committee.

* Published in present issue, page 321.

TWIN CITY VETERINARY ASSOCIATION, MINNEAPOLIS AND ST. PAUL.

The Twin City Veterinary Association, as reorganized last fall, has continued monthly meetings during the winter and recently finished the regular schedule on April 16, 1914.

These meetings have been more in the nature of a special study course than ordinary veterinary association meetings. Each program has been given to a thorough study of some one important subject.

On account of Montana dourine developments during the past year or so, and possibility of trouble for northwestern States, the first program was given entirely to the subject of dourine. The feature of the evening being an address by Dr. Miller, a dourine expert of the Bureau of Animal Industry.

Another program was given entirely to a study of vaccines and serum therapy, including an address by Dr. M. P. Ravenel.

Another program was given entirely to the subject of pneumonia, including anatomy, physiology, histology and pathology as illustrated by especially prepared charts. This gave the foundation for the program. Other addresses covered diagnosis, pneumonia in city practice, pneumonia in country practice, pneumonia in small animals, infectious pneumonia of swine, etc.

The meeting scheduled for May was in the form of a social gathering, concluding with a banquet to which ladies were invited.

M. H. Reynolds,
Secretary.

WESTERN NEW YORK VETERINARY MEDICAL ASSOCIATION.

On April 9, 1914, the veterinarians of Western New York met at the Hotel Statler, Buffalo, N. Y., and formed what is called the Western New York Veterinary Medical Association.

The meeting was called to order by Dr. Hinkley, of Buffalo, and after a few moments the members were addressed by Dr. Moore, director of the New York State Veterinary College (Ithaca), who gave a very inspiring talk on the value of the formation of a veterinary medical association in this end of the State and offered to do all that he was able to make it a success. Dr. Hollingworth, of Utica, put aside his duties as a veterinarian

and made a special trip to Buffalo to help found the association. He delivered several short addresses, which were received with very much enthusiasm; and there is no doubt but that we will profit by his suggestions. Besides having the above noted visitors we were fortunate in also having with us Dr. Switzer, president of the State Society. Like the others, he also offered many good suggestions, and his speeches were filled with encouragement. The officers elected were Dr. E. Volgenau, of Buffalo, as president; Dr. J. L. Wilder, of Akron, as vice-president; and Dr. W. E. Fritz, as secretary and treasurer. Twenty-seven men were present, and no doubt at our next meeting, which will be the last Wednesday in June, we will be able to double our numbers.

Respectfully,
DR. W. E. FRITZ, Secretary and Treasurer.

RESOLUTIONS ADOPTED BY THE VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY, MAY 6, 1914.

RESOLVED, That the common watering trough is a menace to the health of horses in our city.

BE IT FURTHER RESOLVED, That we recommend the abolition of watering troughs and common pails.

AND WE FURTHER RECOMMEND, The substitution of the hydrant with running water or any other sanitary means of having fresh running water; and that,

WE FURTHER RECOMMEND, That each driver have individual pails for each horse, and that a penalty be fixed for any driver using anything other than the horses own pail.

Chas. V. Noback, 1976 Belmont Ave., New York City, Chairman; Chas. E. Clayton, 207 West 55th St., New York City; E. B. Ackerman, 265 Greene Ave., Brooklyn, N. Y.; D. W. Cochran, 19 Vestry St., New York City; Geo. J. Goubeaud, Farrington St. and Broadway, Flushing, L. I., N. Y.; R. W. Ellis, 477 West 150th St., New York City; Committee on Resolutions.

ILLMO VETERINARY MEDICAL ASSOCIATION.

The Illmo Veterinary Medical Association held its 3d meeting in Belleville, Ill., March 26th. Every one able to attend the meeting joined, and the association now has 40 members. All

took active interest in the meeting. An interesting program was rendered at the city hall in the afternoon and evening. The clinic consisted of the following:

Chloroforming in the standing position, by Dr. L. B. Michael, of Collinsville, Ill., who highly recommends it, and stated that he'd as soon chloroform a horse as to cast him.

Passing of the stomach tube, by Dr. W. R. Michael, Highland, Ill.

Firing of chronic tendonitis, by A. Darling, St. Louis, Mo.

Also several extraordinary cases were exhibited.

Next meeting place will be in East St. Louis, Ill., July 17, 1914. L. B. MICHAEL, Sec'y.

NEW YORK STATE ORGANIZES ANOTHER VETERINARY ASSOCIATION.—Through the courtesy of Dr. Walter E. Fritz, the secretary and treasurer of the said association, we have published the meeting of organization in Buffalo, April 9, 1914. The association proposes to comprise in its territory the counties of Erie, Niagara, Orleans, Genesee, Wyoming, Cattaraugus, Chautauqua and Allegheny. It made a good healthy beginning with twenty-seven members, and we predict a strong organization, and congratulate the veterinarians of Western New York on their accomplishment.

DR. E. B. ACKERMAN, OFFICIAL REPRESENTATIVE OF NEW YORK CITY DEPARTMENT OF HEALTH AT LONDON CONGRESS.—Dr. E. B. Ackerman, Chief Veterinarian to the Health Department of New York City, will sail for Europe on July 10th, on the St. Paul, of the American Line (constituting a supplementary official tour of the American Veterinary Medical Association), as an official representative of the New York City Department of Health, at the 10th International Veterinary Congress, London, August 3 to 8, 1914. Dr. Ackerman will also officially visit the Pasteur and other laboratories, also stock yards and abattoirs of the several cities he visits, making a study of the methods of the control of contagious diseases, and gathering any other facts that he may deem of interest and value to his department. He will meet the other party in London, probably returning with them late in August. It is quite probable that the New York State Department of Agriculture may send Dr. John F. DeVine as their official representative on a similar mission.

NEWS AND ITEMS.

New Work on Diseases of Poultry.—We are recently in receipt of a new work on *Diseases of Poultry*, by Prof. B. F. Kaupp, Commissioner of Public Health, Spartanburg, S. C., the result of several years' hard work, both in field and laboratory. We have not been able to review the work in time for this issue, but hope to in the near future.

Addresses of the Following Members of the American Veterinary Medical Association Are Desired.—J. O. Connor, J. M. Courtright, J. T. Dinwoodie, C. O. Durfee, W. J. Embre, H. C. Fischer, A. V. Hall, Frank Hecker, Julian Howard, J. H. Jacobs, A. G. Johnson, E. I. Lollar, O. E. McKim, R. W. MacDonald, Henry Marshall, M. C. Wiley, P. E. Wood, A. H. Quin.* N. S. Mayo, Secretary, A. V. M. A.
4753 East Ravenswood Ave., Chicago, Ill.

Stereopticon Lecture at June Meeting of the Veterinary Medical Association of New York City.—The Luray Caverns in the Shenandoah Valley, with all their beauty and wonder, and beautiful scenery along the Norfolk and Western Railway, will be some of the things that will be thrown on the screen at a lecture to be given at the June meeting of the above association at 141 West 54th street, on Wednesday evening, June 3, 1914. All veterinarians are invited.

The Commencement Address of the Kansas City Veterinary College was this year delivered by Dr. Nelson S. Mayo, Secretary of the American Veterinary Medical Association, and we congratulate the graduating class of 1914 in having had that earnest, eloquent gentleman address them. They cannot measure the good that will come to them in after-life from the inspiring words that were said to them in Dr. Mayo's address, that it has been our great pleasure to read in *The Alumnus*, Vol. 1, No. 10. Men like Mayo do much by their personality and earnest words of wisdom in starting the characters of young practitioners to form in the proper molds.

Department of Agriculture Representative Discusses Glanders.—Dr. H. D. Gill, of the New York State Department of Agriculture, upon request, attended the Keystone Veterinary Medical Association in Philadelphia in May to discuss means for the control of glanders. He also recently appeared before the Bronx County Grand Jury on orders from the Commissioner of Agriculture to elucidate some points on sanitation before that body.

The Illmo Veterinary Medical Association will hold its next meeting July 17, 1914, at East St. Louis, Ill., at the National Stock Yards Hotel. A special effort is being made to secure a good program and Secretary Michael states that the replies received from good men in the profession who are to contribute to the program are very gratifying. We are informed that there are about 200 eligible men in the territory that this organization embraces, and hope that every one of them will attend the July meeting and join the association.

Copies of Proceedings of Fiftieth Anniversary Meeting of the American Veterinary Medical Association may be obtained by writing the librarian of the association, Dr. J. N. Frost, Ithaca, N. Y. The cost is $3. The publication of the foregoing information has been prompted by the numerous inquiries that have come into the Review office as to whether or not it was possible for any one, other than a member of the A. V. M. A., to obtain a copy of the proceedings. Our understanding is that anyone may obtain a copy by paying the cost of production, which has been estimated at $3. Of course the actual *value* of the proceedings of the 1913 meeting of the A. V. M. A. in New York far exceeds that amount, as its 1,100 pages not only contain valuable papers by the leading members of our profession, and discussions of the same, but it is a souvenir number; and marks the fiftieth milestone of veterinary progress in America.

Field Veterinarian for Minnesota Live Stock Sanitary Board.—Dr. Harry Evenson has been appointed a field veterinarian to the above board, with headquarters at Olivia, Minnesota. The board, in co-operation with the B. A. I., are endeavoring to control hog cholera.

Conference on Bovine Tuberculosis.—The following statement from the Department of Agriculture, Albany, New York, Tuesday, May 12, 1914.

Concluding a conference at the State Department of Agriculture to-day upon the question of restricting and eliminating bovine tuberculosis in New York State, a resolution was unanimously adopted asking Governor Martin H. Glynn to name a commission to investigate the subject and report with recommendations of legislation to the Governor before the convening of the legislature of 1915. Governor Glynn was requested to name Commissioner Calvin J. Huson, Dr. V. A. Moore, dean of the State Veterinary College at Ithaca, and Seth Low, of New York City, as three members of the commission, together with such others as he deems advisable.

Twenty answered Commissioner Huson's call to come to Albany and discuss the situation in this State with regard to bovine tuberculosis. It seemed to be the sense of the meeting that the present law providing for the condemnation of animals found to be infected with tuberculosis, and either their slaughter under inspection or isolation under what is known as the Bang system has not resulted in such elimination of the disease as had been hoped. The Wheeler-Machold bill, designed to supplant the present law, which passed the senate at the last session but was killed in rules committee in the assembly, was endorsed by the meeting and will be recommended to the new commission as a basis upon which to build the new bill.

Attending the conference were: Paul E. Taylor, secretary of the New York Milk Committee; Dr. Charles E. North, president of the committee; Dr. E. B. Ackerman, New York City Health Department; G. D. Brill, representing Seth Low; F. D. Walmsley, Utica; F. D. Holford, Albany; E. A. Powell, Syracuse; A. L. Brockway, Syracuse; Dr. V. A. Moore, Ithaca; Prof. H. H. Wing, Ithaca; Dr. F. M. Meader, representing the State Health Department; Dr. W. H. Jordan, Geneva Experiment Station; Dean H. E. Cook, State Agricultural School, Canton; State Senator F. N. Godfrey; Edward Van Alstyne, director of Farmer's Institutes; Harry Winters, deputy commissioner of agriculture; G. L. Flanders, counsel to the agricultural department; Dr. J. G. Wills, chief veterinarian; Dr. J. H. Devine, consulting veterinarian; Dr. Charles Linch, assistant veterinarian; and Commissioner Calvin J. Huson.

Tom Boynton Peck,
Secretary.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n	Mar. 5-6-7, 1914	Auburn	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.	June 10, 1914	141 W. 54th St.	P. K. Nichols, Port Richmond, N.Y.
American V. M. Ass'n	Dec., 28-31, 1914	New Orleans, La	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n	January 5-6, 1915	Little Rock	R. M. Gow, Fayetteville.
Ass'n Médécale Veterinare Française. "Laval"	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago	2d Fri. each month.	Chicago	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha	3d Mon. each month.	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n	Monthly	St. Joseph	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n	December 10, 1913	San Francisco	John F. McKenna, Fresno.
Central Canada V. Ass'n.	Feb. and July	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n	June and Nov.	Syracuse	W. B. Switzer, Oswego.
Chicago Veterinary Society	2d Tues. each month.	Chicago	D. M. Campbell, Chicago.
Colorado State V. M. Ass'n	May 28-29, 1914	Ft. Collins	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n	Aug. 4, 1914	Waterbury	B K. Dow, Willimantic.
Delaware State Vet. Society	Jan., Apl., July, Oct.	Wilmington	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.	3d Mon. each month.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n	2d week, July, 1913.	Rochester	J. H. Taylor, Henrietta.
Georgia State V. M. A	Dec. 22-23, 1913	Atlanta	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A			Louis P. Cook, Cincinnati.
Illmo Vet. Med. Ass'n	July, 17, 1914	E. St. Louis	L. B. Michael, Collinsville. Ill.
Illinois State V. M. Ass'n	July 15, 1914	Springfield	L. A. Merillat, Chicago.
Indiana Veterinary Association	Jan. 14, 1914	Indianapolis	A. F. Nelson, Indianapolis.
Iowa Veterinary Ass'n	Pending	Pending	C. H. Stange, Ames.
Kansas State V. M. Ass'n	Jan. 6-7-8, 1914	Manhattan	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n	Oct. & Feb. each year.	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n	2d Tues. each month.	Philadelphia	Cheston M. Hoskins.
Lake Erie V. M. Association	Pending	Pending	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n	Sept., 1914	Lake Charles	Hamlet Moore, New Orleans, La
Maine Vet. Med. Ass'n	July 3, 4, 1914	Houlton	H. B. Wescott, Portland.
Maryland State Vet. Society		Baltimore	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n	4th Wed. each month.	Young's, Boston.	J. H. Seale, Salem.
Michigan State V. M. Ass'n	Feb. 3, 4, 1914	Lansing	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n	Jan. 14-15-16, 1914	St. Paul	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n	1914	Vicksburg	J. D. Townsend, Louisville.
Missouri Valley V. Ass'n	Jan. 27, 28, 29, 1914	Kansas City, Mo.	Hal. C. Simpson, Denison. Is.
Mississippi Valley V. M. Ass'n	Semi-Annually	Galesburg, Ill.	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n	July, 1913	Kirksville	S. Stewart, Kansas City.
Montana State V. M. A	Sept. 24, 25, 1913.	Helena	A. D. Knowles, Livingston.
Nat'l Ass'n B. A. I. Employees	2d Mon. Aug., 1914.		S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Nebraska V. M. Ass'n	1st Mo. & Tu., Dec. '13	Lincoln, Neb	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y	August 11-12-13, 1914	Rochester	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n	June, 23, 1914.	Wilson	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n	Week of July 20, 1914	Fargo	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A	Nov. 1913	Delphos	E. V. Hover, Delphos.
Ohio State V. M. Ass'n	Jan. 14, 15, 1914	Columbus	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.	Annually	Upper Sandusky.	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n			J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n	Fall, 1913	Oklahoma City.	C. E. Steel, Oklahoma City.
Ontario Vet Ass'n	1st Week in Feb. 1914	Toronto	L. A. Willson, Toronto.
Pennsylvania State V. M. A	Mar. 3, 4, 1914	Philadelphia	John Reichel, Glenolden.
Philippine V. M. A	Call of President	Manila	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n	4th Tues. each month.	Portland, Ore	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A		Mon. and Que	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n	Jan. and June	Providence	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns.	Pending	Pending	B. K. McInnes. Charleston.
South Illinois V. M. and Surg. Ass'n.	Aug. 4-5-6 1914	Salem	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors	1st Wed. fol. the 2d Sun. each month.	St. Louis	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A	June 17, 1914	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn		Philadelphia	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A	Pending	Madison	S. W. Allen, Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.	Jan., Apl., July, Oct.	Los Angeles	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp.	4th Tues. each month	407 Illinois Ave.	H. R. Collins, South St. Joseph.
Tennessee Vet. Med. Ass'n	November, 1914	Nashville	O. L. McMahon, Columbia.
Texas V. M. Ass'n	Nov., 1913	College Station	Allen J. Foster, Marshall
Twin City V. M. Ass'n	2d Thu. each month.	St. P.-Minneap.	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n	Spring of 1914	Salt Lake City	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n			G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia	3d Wed. each month.	514 9th St., N.W.	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ.	1st Sat. each month.	Wash'ton, D. C.	J. M. Cashell, 2115 14th Street.
Vet. Ass'n of Manitoba	Feb. & July each yr.	Winnipeg	Wm. Hilton, Winnipeg.
Vet. Med. Ass'n of N. J.	January 8, 1914	Trenton	E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City	1st Wed. each month.	141 W. 54th St.	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club	Monthly	Jersey City	T. F. O'Dea Union Hill, N. J.
Virginia State V. M. Ass'n	July 9-10 1914	Staunton	Geo. C. Faville, North Emporia.
Washington State Col. V. M. A	1st & 3d Fri. Eve.	Pullman	R. J. Donohue, Pullman.
Washington State V. M. A	June 18-19, 1914	Walla Walla	Carl Cozier, Bellingham.
Western N. Y. V. M. A	June 24, 1914	Buffalo	W.E.Fritz, 358 Jefferson St., Buffalo
Western Penn. V. M. Ass'n	3d Thu. each month.	Pittsburgh	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad	Feb. 10, 11, 1914	Milwaukee	W. W. Arzberger, Watertown
York Co. (Pa.) V. M. A	June, Sept., Dec., Mar	York	E. S. Bausticker, York, Pa.

PUBLISHERS' DEPARTMENT.

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INCREASED THEIR SPACE FOR YOU. The Abbott Alkaloidal Co., whose full page advertisement appears on page 11, in the front forms of our advertising pages, have been so encouraged by the patronage of REVIEW readers, that they have increased their space to a full page, so as to tell their patrons at greater length, how to *cut down their expenses and increase their income*, something in which *all* veterinarians are interested.

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HAVE OUTGROWN THEIR PRESENT QUARTERS. Sharp & Smith, well known to veterinarians everywhere, for the quality of their surgical instruments, have moved (May 1, 1914), into more commodious quarters at 155 to 157 North Michigan Boulevard, where they occupy not only the entire building, but two floors in an adjoining building, aggregating approximately 48,000 square feet of space. The Sharp & Smith firm started business in Chicago, in 1844, seventy years ago, and have continually grown, and as time went on have continued to increase their space until they have reached their present imposing proportions. Chicago had only been incorporated as a city seven years when this enterprising firm was established and they have grown with the city.

AMERICAN VETERINARY REVIEW.

JULY, 1914.

EDITORIAL.

EUROPEAN CHRONICLES.

Paris, May 15, 1914.

TENTH INTERNATIONAL VETERINARY CONGRESS.—The time is slowly approaching when this great event will take place, and when veterinarians from every country in the world, old and new continent, will arrive in London, and by their number show how great the idea of such a congress, by Prof. John Gamgee, was, and the importance such gatherings have had on the progress, the elevation and the standing of our profession.

The several congresses that have already been held have in succession grown larger and more important, and the efforts made by their organizers succeeded in making them, one after the other, and as they returned, events that mark with a brilliant light, the advances that the profession had been making and gave veterinarians of all nations an opportunity to become better acquainted and create between them more friendly and intimate relations.

The meeting in London of this year will no doubt do as well as its predecessors. In fact, if we are well informed, the organizing committee, with the able veterinarian that it has at its head, has prepared a programme where everything that will make the affair a perfect success has been carefully considered.

It was indeed specially necessary that it should be so, as this

year it will not be only veterinarians from every part of Europe who will be in London, but confreres from America are expected to come to attend the meetings, present papers, take active part in the discipline—in other words, will be there to show European veterinarians that Americans are worthy of their ancestors and moving ahead in the great way that is open to them in their professional callings.

The undertakings of Dr. Eichhorn, with his professional visiting tour, will bring to England a number of our confreres who both before and after the London meeting will travel through Europe and see everything of interest that their professional curiosity can have expected. This undertaking of Eichhorn's must be a success. It will be one; and the visit of the American veterinarians will certainly prove one of the greatest evidences of their appreciation of the worth of their calling. *The flag of the Veterinary Profession of America* will fly with honors, we are sure, in London.

For reasons that many of our confreres may understand, I will not be able to be present at the Congress, but nevertheless I will try to keep the readers of the REVIEW well posted as to the work done in London, which no doubt will prove as great and as important as those of the preceding gatherings.

* * *

ON GLANDERS.—In our excellent contemporary, the *Revue Generale de Medecine Vétérinaire,* that Professors Leclainche and Panisset publish, there often appear condensed extracts from articles that our collaborators in New York address to the REVIEW. It is, for instance, that of Drs. Mohler and Eichhorn on the *Immunization Against Glanders* with vaccination with dead bacilli, and also that of Prof. Gill on the *Prophylaxy of Glanders.* In the same number there are two others, relating to the disease, one from Germany and the *Naouk Veterinary Archives.* The first is by Prof. Holterbach and relates to the *Various Methods of Diagnosis with Glanders in General Practice.*

"Latent cases are, it is unanimously acknowledged, the most

difficult to diagnose clinically and also those that contribute most in the propagation of the disease. They are the cases that it is important to make out and not remain satisfied in taking away from the circulation the animals that present open lesions of glanders. To establish a positive opinion on suspicious cases, there are several methods. Holterbach examines them concisely.

1. *Auto-Inoculation.* Operation which consists in making a small intra-cutaneous inoculation of the nasal or ocular discharge of the diseased animal itself. Made on the superior third of the neck, after disinfection and so as to have no hemorrhage; if it is to be applied on several suspect subjects, it must not be forgotten to carefully disinfect the blade of the instrument after each inoculation.

The cutaneous incision rapidly heals without febrile reaction, if the inoculated matter does not contain bacilli of glanders, but in contrary cases from the first to the fifth day there is a thermic reaction of 1.5° and the symptoms of glanders are soon observed. This method gives indication only when the reaction is positive and may be advantageous when malleine is not handy.

2. *The Extirpation of the Submaxillary Lymph Gland.* This method, advocated by some, has for its object to submit the gland to a bacteriologic examination. It is an uncertain method, as it has been proved that in positive cases of glanders the bacilli have not always been found in the glandular tissue.

3. *The Inoculation to Guinea Pigs* made in the classical way gives undeniable results.

4. *The Injection of Malleine* can be made in three different ways, the hypodermic injection, the ophthalmic and the cuti-reaction. According to statistics, the first has given positive results in 89-92 per cent. of the cases, viz.: That in the number of horses destroyed, lesions of glanders were found in 89-92 per cent. of the horses that gave a positive reaction. The second way is still more positive, and out of 32 glandered horses 31 had presented the reaction. The third method, though it has not yet made its proofs in practice, confirms the preceding methods. As to the method of the deviation of the complement and that of the

precipitation, they are methods which belong more to the laboratory than to general practice.

* * *

The second article, by Prof. Grunet, is a contribution to the *study of the reaction of the deviation of the complement.*

The conclusions of the author are: 1. To obtain the hemolytic serum, three injections, at intervals of 5-6 days are sufficient in the peritoneum of a rabbit, of hematies of sheep, to the dose of 1 1/3, 2 or 3 c.c. in suspension in five or six times their volume in physiologic water.

2. Hematies of sheep, carefully washed, may be kept for 7-10 days at the temperature of 2° C., and to serve for the hemolytic reaction.

3. To obtain sterile serum of guinea pig it is better to bleed immediately in the heart with a two globular pipette. It is not necessary to kill the guinea pigs for that, as half of the bled subjects may survive. The quantity of blood thus taken is sufficient for the reaction and the blood is sterile. After 20 minutes of centrifugation, serum can be obtained.

4. Heating bacilli of glanders (culture on gelose) in emulsion in physiologic water at 60° for 4 hours does not kill them.

5. The heating must be kept at least *seven* hours to kill the bacilli.

6. Extract of bacilli of glanders thus made gives the titre of antigen 1 p. 10.

7. Heating the bacilli with antiformine to obtain antigen is not good as the mixing with the hematies becomes colored a *brownish* green.

8. The serum of guinea pigs inoculated with an emulsion of glandered bacilli contains the amboceptor four days after; from that time the reaction of the deviation is positive.

To wash the hematies well, it is necessary to centrifugate them 5 to 7 times for 40 minutes each time in the electric centrifuge.

* * *

NEW METHODS OF DIAGNOSIS.

In Glanders.—The value of malleine in the diagnosis of glanders and the methods advocated for its use are numerous and well known by all. And with all, on account of the possible errors that may follow its verdict and also to increase the chances of certainty, experiments have been made and different methods have found their way in practice.

An Italian veterinarian, Prof. A. Lanfranchi has lately published in *Il Moderno Zooiatro* a new method, which he calls the *Intra palpebro reaction.*

Most practitioners agree that the cutireaction may give erroneous interpretations and that the ophthalmo-reaction itself has failed in a certain number of cases. Lanfranchi has thought to associate the two methods so as to obtain a more certain diagnosis. The operation is simple. A ¼ of c.c. of brute malleine is dissolved in 2.5 of sterile physiologic serum. The lower eyelid is thoroughly disinfected, and the needle of the syringe for the injection is pushed in the connective tissue which separates the skin from the mucous membrane and the injection made.

When operating on horses that have not glanders, there are sometimes phenomenas of reaction, but they are rather limited and temporary, disappearing after 6, 8 or 12 hours.

With horses affected with glanders, the series of manifestations, observed in the cuti and the ophthalmo-reaction, soon develop.

Indeed, as in the sub-cutaneous injection, made in any other region, there is elevation of the temperature (thermic reaction), general symptoms (organic reaction), swelling at the point of injection (local reaction). This swelling however appears early; it is already quite marked after two hours and more severe than in the one observed in horses that have no glanders; it increases in severity between 12 and 24 hours, extends to the upper eyelid, so as to close the palpebral fissure, reaches and even goes far beyond the zygomatic crest of the maxillary. It lasts between 48 and 72 hours.

There are also early phenomenas of reaction in the conjunctiva, which is highly congested, with fully injected blood vessels; from the second hour there is formed in the conjunctival sac and escaping towards the internal angle of the eye a muco-purulent secretion which lasts even after twenty-four hours. In other words, all the phenomena of the ophthalmo-reaction are present.

Prof. Lanfranchi claims that by this method all the diagnostic signs given by the intrapalpebro-reaction represent the collection of those which are obtained with either the cutaneous and the ocular tests both taken separately. The author does not say if he has met with the similar failures.

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In Tuberculosis.—It was certain that the discovery of Lanfranchi, applicable to glanders, would soon find its way to other diseases, detectable by injections of some of their products. If malleine gives such a result with glanders, can tuberculine give it in tuberculosis? Professor Moussu has experimented in that direction and applied to the diagnosis of tuberculosis the method of Lanfranchi, viz.: The palpebral intradermo tuberculination.

At first the results were not satisfactory. But after various modifications he has succeeded in obtaining in animals suffering with advanced tuberculosis positive reaction, easy to observe and as conclusive as those that Lanfranchi has found with malleine in the diagnosis of glanders.

Continuing his investigations, Moussu says that he is now experimenting to find how the method will work in cases of mild form of tuberculosis, in the latent or experimental form of the disease.

A point however is well established, viz.: That the method gives a positive answer and that is the principal question.

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The means of diagnosis of tuberculosis by tuberculine are many. In the *Veterinary Record*, a veterinarian, Wm. Scott, proposes another, viz.: The *puncture of the lungs*. "The more

methods the clinician can bring to his assistance, generally speaking, the better is he in a position to eliminate the risk of error, the result being a more accurate diagnosis."

After careful physical examination (auscultation and percussion), the spot where the puncture is to be made being well disinfected, after the hairs are clipped, and a drop of pure lysol applied at the point of puncture. "Five to ten c.c. of sterile broth or water is taken up and the needle of the aspirator then plunged boldly into the lung parenchyma between the ribs, taking care the seat of puncture is as far removed from the posterior border of the rib as possible, to evade injury to the bloodvessels and nerve. The needle having been driven home, the fluid is now steadily injected, and after the lapse of about a minute aspirated." * * * The material thus collected is then centrifugalized in fine tapering tubes, stained by carbol fuchsin, etc., * * * in the usual way.

After describing his technic, Mr. Wm. Scott relates one case of a cow which had catarrhal pneumonia and in which tubercle bacilli was found in the collected aspirated fluid. Another had pneumonic symptoms and bacilli were also detected in the aspirated fluid. A steer, a Devon bull, a short-horn cow which had pulmonary manifestations of various nature and in which also the aspirated fluid demonstrated the presence of Koch bacilli.

Mr. Wm. Scott concludes: "Lung puncture is a most valuable aid to the diagnosis of pulmonary tuberculosis." It is a simple, harmless operation if carried out properly. He has punctured the lungs of 12 equines and four bovines without any untoward results. Punctures can be repeated. Nine of them were made in 24 hours in a horse used to make vaccine. In the cases recorded, tuberculosis could only be made out positively by the examination of the aspirated fluid and post mortem confirmed the diagnosis thus made.

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Larvar Cylicostomosis.—Under that name a new and serious vermiform enteritis of horse has been described some

months ago in Leclainche and Panisset's *Revue Generale* which throws an important light on a new form of intestinal disease probably heretofore overlooked. The authors of the article have observed it on a colt from a breeding establishment where several subjects had already died with the same disease.

Raised in the field and having all the appearances of health, this colt was taken suddenly with very violent colics, which lasted twenty-four hours. After that attack he lost flesh, although eating good, and he gradually lost strength to such extent that once he fell down and was unable to get up alone. After being raised he whinnied, jumped and ate as any other colt.

The mucous membranes were very pale, the conjunctivae slightly swollen, the temperature 37.5°C. The feces were quite well moulded, but contained many oats undigested; the microscopic examination revealed numerous eggs of strongyliae, 20 to 30 on single preparation.

Soon however the appetite became capricious, the four extremities being swollen and the oedema progressively extended upwards to the pit of the axilla and in the groin. The testicles, the sheath, the interior wall of the abdomen being affected the colt looked as one suffering with purpura. After ten days profuse and infectious diarrhea set in and after forty-eight hours the colt died.

The lesions found at the autopsy involved the whole intestine; the mucous membrane, cleaned of the alimentary matters, appeared filled with a multitude of small, dark cysts, varying in size between one-half and two millimeters in diameter. They were all over the membrane and sufficiently close to each other so as to allow 25 to 30 to be counted on a square centimeter. The largest ones were translucid, round or oval in shape, slightly projecting on the membrane and surrounded by a greyish black circle. The product of the scraping of these cysts contained larvae of nematods. The thick and firm intestinal wall had not changed color, only a few ecchymotic spots being noticed.

* * *

Sections of the intestines showed that the cystic formations were located within the mucous membrane in its chorion. On preparations, they are oval or polyhedral in form and surrounded with the adenoid tissue of the membrane. Their envelop is thin and made of packed connective fibres. In the interior, the parasites cut in all directions show the details of their structure and principally numerous pigmentary granulations. *Embryos* are located in the thickness of the adenoid tissue without cystic formation. There are even some that have passed through the muscular coat and reached the submucous. This is slightly sclerosed and infiltrated with leucocysts. The blood vessels themselves are affected with the chronic inflammation resulting form the irritation caused by the parasites or their toxines.

Besides all these, there were in the lumen of the intestines numerous adult worms, *cylicostomas,* and near them larvae, identical to those of the thickness of the mucous. The worms then reach the intestines as free embryos, probably through impure waters of damp pastures or marshy lands. These embryos enter the intestinal mucous, develop, give rise to the formation of cysts which finally open in the intestines where the parasites become perfect *cylocostomas.* Males and females meet in the intestines, these last lay eggs which are thrown out by feces, the development of embryos follows and the series of infection returned by their introduction in the intestinal canal of other colts.

This new vermiform enteritis is a severe affection for which the prophylaxy indication is rather vague, viz.: The drainage of too moist and marshy lands with the free use of sulphates in the fields.

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Canine Leishmaniosis.—At the *Society of Pathologie Exotique* there was recently a communication made upon that disease which is for most scientific men the sure cause of that terrible affection known as Mediterranean Kala-azar.

The disease as observed in human beings, has been the object of researches, which have proved that it is inoculable to dogs

and that it is very frequently observed in them in their natural state. Sir Leishman, who was one of the first to discover the protozoar cause of the disease, has noticed that when infantile leishmaniosis appears the same condition is also existing in surrounding dogs.

The manifestations of the disease in dogs may not be commonly known, but their perfect knowledge is of importance and will justify the small space that I give it here to-day.

The different characters can be resumed as follows:

In relation to the mode of contagion, it seemed proved that the natural infection of the dog is by fleas. Experiments have shown it. The fleas of man, Pulex irritans, and those of dogs, P. serraticeps, are the means of infection with children principally. Mosquitoes, bed bugs and principally the Cimex lectutarius are dangerous propagators.

Canine leishmaniosis is often altent, no morbid symptom is apparent, the appetite is good, there is no loss of condition—even in the cadavers of dogs, dead with the disease, no lesions can be found and the discovery of the parasites in the spleen and marrow of bones is sometimes very difficult.

But besides the latent forms, there are others where the infection is manifested in a more severe manner. At first there are febrile accesses, the anhemia is not very marked and for months perhaps this stage of the disease remains until the last, when death is close, when weakness of the hind quarters and complete paralysis will follow. Nephritis is a common complication. The disease is slow to run its course, and death, which is rather rare, occurs only on an average after 8 or 9 months.

At the autopsy made of dogs that have died, the spleen is often found the seat of lesions quite characteristic. It is generally hypertrophied in the stage of acme of the disease and in serious cases it is only small and fibrous in consistency when the animal is about recovering.

The marrow of bone is most often red and diffluent. The liver has a normal aspect. The kidneys perhaps nephritic. Thoracic organs generally healthy.

It is in the marrow bone and in the spleen that the parasites, *Leishmanias,* are found in greatest number, and again in the liver and lymphatic glands. These parasites are endocellular, are in great number in the mononuclear leucocytes, the endothelial and the hepatic cells. One single leucocyte can contain as many as 60 to 80 *Leishmanias.*

The parasites of natural infections in dogs have the classical aspect of that of Donovani and of the infantile Leishmaniosis, they all cultivate and grow in the same condition. It is of a rounded, often an oval, form, and is constituted by a thin, transparent enveloping membrane, containing an homogenous and clear protoplasm and two chromatic bodies. There is a nucleus and a centrosome.

The diagnosis of the disease is difficult and only laboratory methods will permit of a positive one. The prognosis does not seem serious. Recovery is generally the end of the trouble. A first attack is said to give the dog complete immunity.

No special form of treatment has been recommended. One rapid recovery is said to have followed the administration of Salvarsan.

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THE FEDERAL ANTI-NARCOTIC LAW.

On page 488 of this issue we have called to the attention of the veterinarians of New York State, the Boylan Bill, which has become a law, operative July 1, 1914. This new law is going to cause veterinarians considerable additional work in dispensing, and we fear considerable annoyance; but it is a law, and we have got to provide ourselves with the necessary blanks and abide by it. But this seems to be but the beginning of the end. The proposed Louisiana Narcotic Law is still more embarrassing to practitioners of medicine, veterinary medicine, or dentistry; and there is also now before the United States Senate the Harrison Anti-Narcotic Bill, known as H. R. 6282, which is not a bad bill in itself, but on June 6 the United States Senate, on the recommendation of Senator Thomas, acting for the Senate Finance Committee, adopted an amendment, which, if passed, would mean to the practising veterinarian, physician or dentist about as follows:

First—The veterinarian, physician or dentist must keep a correct and accurate and detailed record of every single restricted narcotic drug dispensed or given away, to wit, opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof, *except* in the few instances exempted, *no matter in what proportion or composition or on what occasion so dispensed.*

The country practitioner who dispenses for the most part, riding out by night and day, acting so frequently in emergencies, constantly dispensing, *would bear the brunt of this restriction.* ANY SINGLE SLIP-UP WOULD SUBJECT HIM TO THE FULL PENALTY OF THE LAW, OF A FINE OF NOT MORE THAN $2,000, OR IMPRISONMENT FOR NOT MORE THAN 5 YEARS, OR BOTH.

Second—The government, state and municipal officials will be able *to check up the amounts purchased and the amounts so dispensed.* It will be absolutely impossible in practise for the active dispenser so to dispose of these restricted drugs as to have the purchases and dispensing balance. The result would be that every such active practitioner would be liable to the full penalty

of the law, as above. He would also be put to the constant trouble and worry of endeavoring to keep these records straight and to the constant espionage and explanation by and to all the federal, state and municipal officials.

Third—This record must be made in a suitable book kept for that purpose. This book would have to be constantly with the physician, dentist or veterinarian, in order to record each dispensing, subject to being misplaced or lost, with the result that he would be liable to the full penalty of the law.

And in states where there is already a state law, as in New York State, two books of record would be required to be kept, and the practitioner would be further embarrassed and annoyed. Why not cease dispensing, some may ask (that is probably the object of the bill), but how is that possible with a country practitioner that has to go out miles into the country, away from drug stores? And even city practitioners find it difficult if not impossible to get a prescription compounded after a certain hour of the night. And where they do get it done, often jeopardise the life of their patient while waiting for it. So ceasing to dispense is impracticable, and our only protection is to endeavor to prevent legislation that works the hardship to us, that this amendment to the Federal Narcotic Law would surely accomplish.

New York State practitioners are already facing the difficulties imposed by the law which goes into effect July 1; that is a law and must be obeyed; but we sincerely hope that the amended federal bill does not become a national law, at least until its practicability has been proven in the Empire State. So if it has not passed by the time this number reaches you, get in touch with your senator at once.

EIGHTY-SECOND COMMENCEMENT EXERCISES OF NEW YORK UNIVERSITY.

Ideal weather, excellent music by Shannon's 23d Regiment Band and the Campus at University Heights wearing its richest

shade of green, dotted with groups in University colors, were the auspicies under which the classes of the several schools of New York University received their degrees at the eighty-second anniversary of that grand old institution of learning on June 10th last. It was under those auspicious surroundings, too, that the members of the first class graduated from the New York State Veterinary College at New York University, received their degrees as Doctors of Veterinary Surgery. It was a proud moment for them; but no more so than for the many alumni present from several States. Such an occasion *must* be a proud moment for *all* veterinarians, and for *everyone* who are truly interested in veterinary education; especially on an occasion such as this, when the conferring of veterinary degrees as a part of the commencement exercises of a great institution of learning was witnessed and participated in by the Secretary of War of the United States, Lindley M. Garrison, who received himself the Honorary Degree of Doctor of Laws. Until very recently the War Department has had a rather poor opinion of the veterinary profession, and we feel sure that Secretary Garrison's participation in the recent commencement exercises at New York University will help to enhance the better opinion of our profession that it has more recently entertained. On the same platform a few minutes after the Secretary of War had received the purple, the Chief Executive of Greater New York, Hon. John Purroy Mitchel, also received the Honorary Degree of Doctor of Laws. Mayor Mitchel is deeply interested in educational matters, to which he is devoting considerable of his time. The veterinary alumni had a most excellent dinner in the evening of the same day at the New York Athletic Club.

ON BOARD THE FINLAND.

Responding to the REVIEW'S call in its June issue to friends of the sailing party on the official A. V. M. A. tour, under direction of Dr. Eichhorn, to go down to the pier and "see them off,"

a number of veterinarians and ladies went aboard the S. S. Finland in her dock at the foot of West 23d street on Saturday morning, June 10," and spent a pleasant hour before sailing time with their friends who were embarking on the trip. Of the nineteen names published in the June REVIEW, page 275, all were in the Finland's official passenger list and on board—including President Marshall, of the A. V. M. A., and Mrs. Marshall—except Dr. and Mrs. S. Stewart, of Kansas City, who were prevented from carrying out their plans by illness in the family. The sailing party was a merry one, and the massive elegance of the steamer, combined with the ideal weather to make those present to bid them *bon voyage,* regret that they were not going also. It was suggested on leaving the pier that a party from New York and Boston meet the steamer that brings the party (augmented by installments that will follow on later steamers) into the Boston Harbor on August 23d. We trust that the suggestion will become a reality.

HOPEFUL OUTLOOK FOR VETERINARY LEGISLATION.

While neither the Army Veterinary Bill nor the Lobeck-Lewis B. A. I. Bill had reached their final hearing at the time of this writing, the outlook for both bills that mean so much to the American veterinary profession is decidedly hopeful. At our last conference with Chairman Hoskins, of the Committee on Army Legislation, A. V. M. A., he seemed very hopeful of the passage of the Army Veterinary Bill in the 63d Congress; and Secretary Walkley, of the National Association Bureau of Animal Industry Employees, states that an individual interview of the members of the House Senate Committee found them quite favorably disposed toward the measure; and taking all the signs displayed, he feels very much encouraged. Still it is not wise to be too sanguine, but to keep jogging up your representatives on both measures.

ORIGINAL ARTICLES.

THE PRODUCTION OF ARTIFICIAL IMMUNITY AGAINST TUBERCULOSIS IN DOMESTIC ANIMALS.*

By S. H. Gilliland, V.M.D., M.D., Former State Veterinarian of Pennsylvania, Late Director Pennsylvania State Department of Health Laboratories, Marietta, Pa.

(*Continued from June issue.*)

Experiment 115E.

This experiment was started with the object of ascertaining the most efficient and safest dosage, as well as the minimum number of vaccinations required to produce a serviceable degree of immunity against natural infection.

Seven yearling animals were selected for the experiment. Four of them were immunized, each one differently in regard to size and number of doses of vaccine. The three remaining animals were kept under similar conditions as controls. All the animals were carefully tuberculin tested at the beginning of the experiment and found to be free from tuberculosis.

VACCINATIONS.

Animal No. 20012. Red and white heifer, weight 440 pounds—

1903
Sept. 11 Vaccinated in Jugular Vein 20 c.c. Standard Suspension Culture M.

Animal No. 20013. Red heifer, weight 446 pounds—

1903
Aug. 6 Vaccinated in Jugular Vein 2 c.c. Standard Suspension Culture M.
Aug. 19 Vaccinated in Jugular Vein 20 c.c. Standard Suspension Culture M.
Oct. 10 Vaccinated in Jugular Vein 40 c.c. Standard Suspension Culture M.

* Read before the Pennsylvania State Veterinary Medical Association, Philadelphia, March, 1914.
From the Laboratory of the State Livestock Sanitary Board of Pennsylvania.

Animal No. 20015. Red and white heifer, weight 438 pounds—

1903
Aug. 6 Vaccinated in Jugular Vein 20 c.c. Standard Suspension Culture M.
Sept. 2 Vaccinated in Jugular Vein 2 c.c. Standard Suspension Culture M.
Oct. 10 Vaccinated in Jugular Vein 40 c.c. Standard Suspension Culture M.

Animal No. 20016. Red heifer, weight 357 pounds—

1903
Sept. 11 Vaccinated in Jugular Vein 15 c.c. Standard Suspension Culture M.
Oct. 10 Vaccinated in Jugular Vein 25 c.c. Standard Suspension Culture M.

Within ten minutes following the injection on October 10th this animal showed great depression, with pulse over 100 and rapid, labored and painful respirations. Animal died in 45 minutes.

Autopsy revealed an acute extensive edema of the lungs. This animal was replaced by

Animal No. 20018. Roan heifer, weight 372 pounds, and received the following vaccinations—

1903
Oct. 24 Vaccinated in Jugular Vein 15 c.c. Standard Suspension Culture M.
Dec. 7 Vaccinated in Jugular Vein 20 c.c. Standard Suspension Culture M.

Controls—

Animal No. 20014, solid red heifer, weight 405 pounds.
Animal No. 20017, small red heifer, weight 375 pounds.
Animal No. 20026, black and white bull, weight 180 pounds.

These animals, vaccinated and controls, were kept during the period of vaccination and until December 15, 1903, in a stable in connection with the Veterinary Hospital of the University of Pennsylvania, after which date they were taken to the Experimental Farm of the State Livestock Sanitary Board in Delaware County, where they were exposed to natural infection by association with tubercular cows.

It was desired to have the exposure as even as possible, and a stable plan was outlined by which each animal was stanchioned adjacent to a diseased cow. The animals of the experiment were changed weekly from stanchion to stanchion in regular sequence, the tubercular cows remaining in the same stall. We believed this method would give a more even exposure to infection.

Results of Autopsies, Vaccinated Animals.

Animal No. 20012. Killed May 28, 1906, two and one-half years from date of exposure. Weight, 767 pounds. Tubercular lesions found in posterior mediastinal gland, t t. Bronchial gland, t t; and liver, t t.

Animal No. 20013. Killed January 21, 1906; two years and one month of exposure. Weight, 800 pounds. Tuberculosis of lungs, t t. Bronchial gland, t t. Mediastinal glands, t t t. Post-pharyngeal, t t. Mesenteric glands, t t.

Animal No. 20015. Killed May 28, 1906; two and one-half years of exposure. Weight, 746 pounds. All organs, glands and membranes normal except one mesenteric gland, which contains a suspicious caseo-callous mass ½ inch in diameter. No animal inoculations were made to determine if the same contained living tubercle bacilli.

Animal No. 20018. Killed May 28, 1906; two and one-half years of exposure. Weight, 790 pounds. The right lung contained a mass 1 inch by 2 inches which on section showed considerable fibrous tissue surrounding collections of pus, ¼ of an inch in diameter, which contained tubercle bacilli. On histological examination a peri-bronchial lymphatic node contained a tubercle with beginning caseation and tubercle bacilli. All other organs, glands and membranes normal.

Controls—

Animal No. 20014. Killed September 17, 1904; nine months of exposure. Weight, 610 pounds. This animal was in poor condition. Tuberculosis found in left lung, t t. Right lung, t t t. Pericardium, t t. Left bronchial gland, t t. Mediastinal glands, t t t. Mesenteric glands, t t. The inferior maxillary bone on right side was enlarged and discharging pus through a fistulous tract, evidently actinomycosis. There was apparently a double infection of the right lung—actinomycosis and tuberculosis.

Note.—The extent of the disease is indicated by t signs. One t sign means very slightly involved, while six t t t t t t signs means extensive involvement of the organ, gland or tissue named.

Animal No. 20017. Killed May 28, 1906; two and one-half years of exposure. Weight, 782 pounds. Lesions of tuberculosis found in lungs, t t. Mediastinal glands, t t t t. Mesenteric glands, t t t. Liver, t. Post-pharyngeal glands, t t.

Animal No. 20026. Killed May 28, 1906; two and one-half years of exposure. Weight, 840 pounds. Tuberculosis of the lungs, t t. Bronchial glands, t t t t. Mesenteric glands, t t t t. Liver, t t t. Diaphragm, t t.

It will be seen that all of the vaccinated animals contained lesions upon autopsy. Animal No. 20012, which received only one vaccination, had no lesion in the lungs but in the associated lymphatic glands and liver. Was this animal not protected by one vaccination or was the immunity thus conferred so weak that it was lost before the two and one-half years of exposure had expired? Animal No. 20013, which received a large initial dose of vaccine followed by a small dose, and then a large third dose, was not protected, while animal No. 20015, which received a small initial dose followed by two increasing doses, was protected to a greater degree than any of the others. However, none of the vaccinated animals showed as many or as wide a distribution of lesions as the controls.

Experiment 115f.

This experiment was started with the object in mind of ascertaining whether a greater cell resistance could be obtained by using a vaccine in which the tubercle bacilli were suspended in the glycerine veal broth which contained the toxin liberated by them during their growth on the same. In other words, to produce in an animal, both bacterial immunity and a toxic immunity.

This experiment was not in any way satisfactory and little can be gotten from the results, though it might be well to here record them.

The vaccine was prepared as formerly described except instead of using normal saline solutions for the suspension of the tubercle bacilli, the glycerine veal broth upon which they had been grown for six or more weeks was used as the medium.

After the suspensions were prepared an attempt was made to kill the bacilli by the addition of phenol or by heat.

Seven carefully tuberculin-tested animals were selected for the experiment. Two of them were kept as controls, and the remaining five were treated.

Three of the animals, No. 20020, No. 20022 and No. 20024, were injected seven times intravenously with a toxin broth suspension of standard opacity of culture M. The injections extended over a period from September 5, 1903, to June 30, 1904, and the dose ranged from 5 to 25 cc. In some of the suspensions used for the injections the tubercle bacilli were killed by the addition of phenol, while in others they were killed by heat.

The remaining two animals selected for immunization, No. 20021 and No. 20023, received on September 11, 1903, one injection of a toxin broth suspension of culture M. This culture was of bovine origin and possessed a high degree of virulence for cattle. To the suspension was added 10 per cent. of a 5 per cent. solution of carbolic acid and allowed to stand 36 hours before being injected.

On July 5, 1904, all of the treated animals with their controls, No. 20019 and No. 20025, were exposed to natural infection on the Experimental Farm by association with badly tubercular cows.

Results of Autopsies—

Animal No. 20020. Killed September 19, 1904. Exposure, three months. This animal had been blind for some time. Lungs studded with gray, miliary tubercles. No other lesions found in any part of the body.

Animal No. 20022. Killed November 18, 1905. Exposure, one year four and one-half months. No tuberculosis in any part of the carcass except a small nodule in right lung near anterior border of posterior lobe. Guinea pigs inoculated from same developed generalized tuberculosis.

Animal No. 20024. Killed December 30, 1905. Exposure, one and one-half years. In one mediastinal gland and in one

bronchial gland there were a few caseous foci found ⅛ to ¼ of an inch in diameter.

Animals Nos. 20021 *and* 20023 which received one injection of a broth suspension of bovine culture H both died within four weeks following the injection. Autopsy revealed an acute miliary tuberculosis. Evidently the phenol had not killed the tubercle bacilli in the suspension in the time allowed.

Control Animal No. 20019. Killed November 18, 1905. Exposure, one year four and one-half months. Tuberculosis of lungs, t t t t t. Mediastinal glands, t t t t t. Post-pharyngeal glands, t t t t. Mesenteric glands, t t t.

Control Animal No. 20025. Killed January 20, 1906. Exposure, one year six and one-half months. A slight tuberculosis of one lung.

It does not seem possible to draw any conclusions of much value from these results. It seems probable that the toxin in the vaccine may have been a factor in the blindness of animal No. 20024. Was the resistance of this animal lowered by the toxin and it became infected by the vaccine? The exposure to natural infection was only three months.

Experiment 115h.

This experiment was outlined with two objects in view. First, to determine the quantity of vaccine and the number of vaccinations required to produce a serviceable degree of immunity against tuberculosis from natural infection. Second, to determine the length of time this immunity is retained by the animal.

Thirty tuberculin-tested animals were selected for the experiment. Twenty were vaccinated and ten kept as controls.

The twenty animals to be vaccinated were divided into five lots of four animals each, and hereafter known as Lots A, B, C, D, and E.

The animals of Lot A, Nos. 1, 5, 10 and 21, received two

intravenous vaccinations of a standard suspension of culture M, viz.:

1904.

January 6 5 cc., and twenty days later,
January 26 25 cc.

On February 16, 1904, 21 days following last vaccination, these animals were exposed to natural infection by being stabled with badly tubercular cows.

Results of Autopsies, Lot A—

Animal No. 1. Killed December 6, 1904; nine and three-fourths months of exposure. No lesions of tuberculosis could be found.

Animal No. 5. Killed December 30, 1905; one year ten and one-half months of exposure. Tuberculosis found in mediastinal gland, t. Post-pharyngeal gland, t t; and mesenteric glands, t t t.

Animal No. 10. Killed January 2, 1907. Two years ten and one-half months of exposure. One encapsulated nodule ¾ inch in diameter in left lung. Mesenteric glands, t t. Post-pharyngeal gland, t. All the lesions well encapsulated and have the appearance of closed processes.

Animal No. 21. Killed January 1, 1907; two years ten and one-half months of exposure. Tuberculosis found in lungs, t t. Mediastinal glands, t t t. Liver, t t t. Portal gland, t t.

The animals of Lot B, Nos. 4, 6, 8 and 27, received two intravenous vaccinations of a standard suspension of culture M., viz.:

1904.

January 6 5 cc.
March 6 25 cc.

On March 19, 1904, 13 days following last vaccination, these animals were exposed to natural infection the same as Lot A.

Results of Autopsies, Lot B—

Animal No. 4. Killed January 1, 1907; two years ten and one-half months of exposure. Tuberculosis found in lungs, t t. Left bronchial, t. Right post-pharyngeal, t t. Mesenteric, t.

Animal No. 6. Killed December 30, 1905. One year ten and one-half months of exposure. Tuberculosis of lungs, t t t. Bronchial glands, t t t. Mediastinal glands, t t t. Right post-pharyngeal gland, t.

Animal No. 8. Killed January 9, 1907. Two years ten and three-fourths months of exposure. Lungs normal. Tuberculosis found left bronchial gland, t. Mesenteric glands, t t t. Liver, t. All the lesions in this animal were distinctly encapsulated.

Animal No. 27. Killed January 9, 1907. Two years ten and three-fourths months of exposure. One nodule ¾ by ⅜ inch in left lung. One mesenteric gland contains three perfectly dry calcareous nodules. All other organs normal.

The animals of Lot C, Nos. 17, 18, 20 and 25, received three intravenous vaccinations of a standard suspension of culture M as follows:

1904

Jan. 6 Vaccinated in Jugular Vein 5 c.c. Culture M.
Feb. 16 Vaccinated in Jugular Vein 20 c.c. Culture M.
Mar. 19 Vaccinated in Jugular Vein 30 c.c. Culture M.

These animals were exposed shortly after the last vaccination to natural infection by association with badly tubercular cows.

Results of Autopsies, Lot C—

Animal No. 17. Killed January 21, 1906. No lesions of tuberculosis. Normal throughout.

Animal No. 18. Killed December 30, 1905. Normal throughout except small caseo-calcareous focus ¼ inch in diameter in left bronchial gland. Well encapsulated and in latent condition.

Animal No. 20. Killed January 20, 1907. Tuberculosis found in lungs, t. Bronchial glands, t t. Mediastinal gland, t t. Post-pharyngeal gland, t. One mesenteric gland, t. These lesions are very slight, but widely distributed.

Animal No. 25. Killed January 1, 1907. Lesions of Tuberculosis found in lungs, t t t. Liver, t t t. Portal gland, t t t. Mesenteric glands, t t. Omentum, t.

The animals of Lot D, Nos. 13, 14, 23 and 26, received three intravenous vaccinations of a standard suspension of culture M, as follows:

1904
Jan. 6 Vaccinated in Jugular Vein 5 c.c. Culture M.
Mar. 6 Vaccinated in Jugular Vein 30 c.c. Culture M.
May 8 Vaccinated in Jugular Vein 40 c.c. Culture M.

The exposure of these animals to tuberculosis infection started before the vaccinations were completed, though the degree of exposure became more severe shortly following the last vaccination.

Results of Autopsies, Lot D—

Animal No. 13. Killed January 2, 1907. Lungs normal. Tuberculous lesions in mediastinal glands, t t t. Bronchial glands, t t. Mesenteric glands, t t t. Post-pharyngeal glands, t t. All of these lesions are distinctly fibrous.

Animal No. 14. Killed April 24, 1905. No tuberculosis in any part of body. Killed on account of lung abscess due to foreign body from rumen.

Animal No. 23. Killed January 21, 1906. No lesions of tuberculosis of any of the organs, glands or membranes.

Animal No. 26. Killed January 9, 1907. Lungs normal except for some new formed fibrous tissue on pleura covering. Tuberculosis of left bronchial gland, t t. Mediastinal glands, t t. One mesenteric gland, t. Right post-pharyngeal, t t.

The animals of Lot E, Nos. 11, 15, 16 and 28, received ten intravenous vaccinations of a standard suspension of culture M as follows:

1904

Jan. 6 Vaccinated in Jugular Vein 10 c.c. Culture M.
Jan. 26 Vaccinated in Jugular Vein 20 c.c. Culture M.
Feb. 16 Vaccinated in Jugular Vein 20 c.c. Culture M.
Mar. 6 Vaccinated in Jugular Vein 20 c.c. Culture M.
Mar. 19 Vaccinated in Jugular Vein 15 c.c. Culture M.
Apr. 2 Vaccinated in Jugular Vein 20 c.c. Culture M.
Apr. 15 Vaccinated in Jugular Vein 15 c.c. Culture M.
Apr. 26 Vaccinated in Jugular Vein 10 c.c. Culture M.
May 2 Vaccinated in Jugular Vein 20 c.c. Culture M.
May 8 Vaccinated in Jugular Vein 20 c.c. Culture M.

On March 19, 1904, these animals were exposed to moderate degree of natural infection, which become more severe after the vaccinations were completed.

Results of Autopsies, Lot E—

Animal No. 11. Killed July 21, 1906. Lesions of tuberculosis found in lungs, t t. Left bronchial gland, t. Pericardium, t. Costal pleura opposite pericardium, t. Mediastinal glands, t t t. Post-pharyngeal glands, t t. Abscess back of pharynx connecting with same. Several lymphatic glands adjacent to same firm and caseous.

Animal No. 15. Killed January 9, 1907. All organs, glands, etc., apparently normal from microscopic examination. Section from posterior mediastinal gland upon histological examination shows in center of section several giant cell-like bodies. No evidence of caseation or cellular infiltration. Guinea pigs inoculated from emulsion of this gland developed tuberculosis. Guinea pigs inoculated from other organs and glands were normal when killed.

Animal No. 16. Killed September 16, 1904. No evidence of tuberculosis could be found. A few lung worms (strongylus micruris) found in the bronchi.

Animal No. 28. Killed January 9, 1907. No tuberculosis found except in one post-pharyngeal gland, which on section contained a thick fluid not entirely characteristic of tuberculosis. Guinea pigs inoculated from the same developed tuberculosis. Guinea pig inoculations from liver, spleen, kidneys, lung and mediastinal were negative.

The ten control animals, Nos. 2, 3, 7, 9, 12, 19, 22, 24, 29 and 30, were kept under similar conditions as the twenty vaccinated animals. There were two controls for each lot of four vaccinated animals. The controls received the same degree of exposure as the animals that were vaccinated.

RESULTS OF AUTOPSIES ON CONTROLS.

Animal No. 2. Control for Lot A—

Killed November 4, 1904. Length of exposure to infection eight months. General condition bad. Extensive tuberculosis of lungs, bronchial and mediastinal glands. These tissues scored to the extent of t t t t t t, or the highest degree in the scale.

Animal No. 3. Control for Lot A—

Killed January 10, 1907. Length of exposure to infection two years ten and three-fourths months. Animal in poor condition. Tuberculosis of lungs, t t t. Bronchial glands, t t t. Liver, t t. Portal gland, t. One kidney, t. Mesenteric glands, t t. Post-pharyngeal glands, t t t.

Animal No. 7. Control for Lot B—

Died May 7, 1904. Two months following exposure. The autopsy notes of this animal were lost, but the physical condition of the animal prior to death was one of tuberculosis.

Animal No. 9. Control for Lot B—

Killed January 10, 1907. Length of exposure to infection two years ten and three-fourths months. Tubercular lesions found in lungs, t t t t. Bronchial glands, t t t t. Mediastinal glands, t t t t. Mesenteric glands, t t. Post-pharyngeal glands, t t t. Superior cervical lymphatic glands, t t.

Animal No. 12. Control for Lot C—

Died January 14, 1906. Animal had been in poor condition for some time. Tuberculosis found in lungs, t t t t t. Some of

the caseous masses are 10 inches in diameter. Bronchial glands, t t t. Right post-pharyngeal, t t. Portal lymphatic gland, t t. Mediastinal gland, t t t t t.

Animal No. 19. Control for Lot C—

Killed January 10, 1907. Tuberculosis found in lungs, t t. Bronchial glands, t t t. Mediastinal glands, t t. Portal gland, t. Mesenteric gland, t.

Animal No. 22. Killed January 10, 1907—

Tuberculosis found in lungs, t t t t. Some of the diseased masses as large as four inches in diameter. Bronchial glands, t t t. Mediastinal glands, t t t t. Post-pharyngeal glands, t t.

Animal No. 24. Killed January 10, 1907—

Tubercular lesions found in lungs, t t t. Pleura, t t. Left bronchial gland, t. Posterior mediastinal, t.

Animal No. 29. Died March 7, 1906—

Animal had been in poor condition for three months. Coughed badly. Refused grain and had to be assisted to regain feet when down. Extensive generalized tuberculosis of the organs, glands and membranes of thoracic and abdominal cavities. Also post-pharyngeal glands.

Animal No. 30. Killed January 10, 1907—

Tubercular changes found in lungs, t t. Posterior mediastinal gland, t. Mesenteric gland, t. Omentum, t. The disease in this animal was not very extensive.

The exposure of the animals in this experiment to natural infection was as even as possible under the conditions. Each animal was stabled next to a tubercular cow and at certain intervals these animals were changed in regular order, so that every animal came in contact with all the tubercular cows used for infection purposes.

In analyzing the results of this experiment we find:

First—That the controls were more extensively diseased. The lesions were more widely distributed. Three of the controls died within two years from the time the exposure to infection began, showing that the degree of exposure was rather severe. All of the vaccinated animals lived until killed.

Second—Five of the vaccinated animals, Nos. 1, 17, 14, 23 and 16, showed no lesions of tuberculosis whatever. Animal No. 15 showed no macroscopic lesions, but guinea pigs inoculated from congested area in post-pharyngeal gland developed tuberculosis. Three of the animals, Nos. 27, 18 and 28, had very slight lesions, in some instances only ¼ of an inch in diameter.

Third—The lesions in the controls were active and progressive, while those found in the vaccinated animal had the appearance of being latent retrogressive.

Fourth—It is possible that the immunity given the animals in Lots A and B had been lost before they were killed.

Fifth—From the character of the lesions and from later experience the writer believes that the animals in Lots C, D and E were exposed too early, and were at that time more susceptible to infection than normal.

Experiment 115 1.

This experiment was started to ascertain whether a tuberculosis-free herd could be reared from animals a large percentage of which were afflicted with tuberculosis—many of them in the advanced form of the disease. Also to obtain further knowledge upon the best culture of tubercle bacilli for the vaccine, the dosage and number of vaccinations required.

The animals used in this experiment were the calves from the tuberculous cows kept for infection purposes, as well as some calves from the vaccinated and control animals in the foregoing experiments.

The method employed was to vaccinate the calf within three to eight weeks from birth, or as soon as it was strong enough to withstand the initial dose of vaccine. The number of doses of

vaccine given were from two to four and in most cases three doses. The initial dose was 1 cc. or 2½ cc. depending upon the condition, size and age of the calf. Each subsequent dose was increased. No regular plan of increasing the dose was followed. The maximum dose for the last injection was never more than 10 cc.

During the early part of the experiment the calves were not removed from their dams, many of which were excreting tubercle bacilli in their milk. They were also kept in infected stables and allowed to run with tuberculous animals. It was found during the progress of this experiment that the resistance of the calf against tuberculosis during the period of vaccination and for a few weeks thereafter was less than the normal resistance of an animal, and if exposed to infection at the time of vaccination was more liable to contract tuberculosis than the normal controls. The autopsy finding indicated the infection implantation took place more readily, but the disease did not appear to progress as rapidly as in the controls.

There were 22 calves immunized at the time they were allowed to remain with their tuberculous mothers and in infected stables. All of these calves either died or were killed within 2½ years following the last vaccination. At autopsy all of the 22 animals showed lesions of tuberculosis except two.

In the latter part of the experiment the calves were removed from their tuberculous mothers and the infected stables as soon after birth as possible, and kept in a special stable away from infection and fed on milk from tuberculous cows that had been pasteurized or boiled. There were nine calves handled in this manner. They were not vaccinated until they were three to four months old and received three injections of vaccine prepared from culture M. The dosage was increased at each vaccination. After the vaccinations had been completed for some time they were exposed to infection by association with tuberculous cows. These nine animals were killed approximately three years following the vaccinations and all of them were normal in every respect except two, which showed small lesions of tuberculosis—

one in the mesenteric glands and the other in the mediastinal glands. Is it not possible that the immunity in these two animals had been lost during their three years of exposure?

As checks for the above vaccinated calves there were 24 calves kept in a similar manner as controls. A large number of these controls died during the progress of the work and on autopsy were found to be badly diseased—in many cases showing a generalized tuberculosis. In no instance were any of them free from tuberculosis.

In comparing the autopsy results of the vaccinated animals with the controls, there is a marked difference in the extent and distribution of the lesions. In the controls they were more extensive, more widely distributed and distinctly progressive, while in the vaccinated animals they were dry, caseo-calcareous or calcareous and in many instances surrounded by a firm, fibrous capsule.

After carefully analyzing the results of the experiments here recorded, I have arrived at the following conclusions:

Intravenous injections of tubercle bacilli from human sources, non-virulent for cattle, are capable of conferring an immunity in cattle against tuberculosis sufficient to withstand natural infection by association with tubercular cows.

The length of the immunity has not been determined accurately, though it is believed to gradually diminish after 2½ years. It is necessary that the animals, during the period of vaccination, and for at least eight weeks following the last vaccination, be kept in a manner that they are in no way exposed to tubercular infection.

The normal resistance of the animal is apparently lowered during the period of vaccination.

The number of vaccinations and the amount of vaccine administered, has a direct relation to the degree of immunity conferred.

The interval between vaccinations should be of sufficient length to allow the reaction following the previous vaccination to entirely subside.

The results of the experiments lead us to be hopeful that the day may come when animals can be immunized against tuberculosis in common practice.

Until further knowledge is obtained in regard to the destruction or outcome of the living tubercle bacilli constituting the vaccine, no practical method for the immunization of animals under ordinary conditions can be advocated.

REFERENCES.

To Dr. Leonard Pearson much credit is due for the original plans of these experiments, and only through his untiring efforts were means obtained from the Legislature by which it was possible to pursue this important line of investigation. Difficulties arose in the progress of this work that seemed insurmountable, and through the wise counsel, kindly suggestions, and encouraging words of this one man the parties in direct charge of the work were stimulated to exert their best efforts.

The writer is deeply conscious of the fact that these experiments could have been presented in a more concise, a more intelligent and a more able manner by the one whose untimely death was a severe blow to the entire veterinary profession. These investigations were originally planned and started by Dr. Leonard Pearson and the writer, who later secured the assistance of a number of men, and to these men I desire to express my thanks:

To Dr. M. P. Ravenel for the isolation of most of the cultures used in the preparation of the vaccine.

To Dr. C. Y. White and Dr. John Reichel for the histological examinations.

To Dr. E. S. Deubler and Dr. John Reichel for the preparation of the vaccine for the latter experiments and general bacteriological work.

To Dr. E. S. Deubler credit is due for many of the autopsies, the vaccinations of the animals and the supervision and management of the Experimental Farm following 1907.

For general assistance during various phases of this work we are indebted to Dr. H. C. Campbell, Dr E. P. Althouse, Dr. E. Barnett and Dr. I. B. Powell.

More American Veterinarians to the Congress in London.—As stated in our June issue, Dr. Ackerman, of the New York City Board of Health, will sail on the S. S. St. Paul of the American Line; and Dr. John F. DeVine, as the official representative at the Congress of the New York State Department of Agriculture, will accompany him. Dr. S. Brenton, Detroit, will sail on the S. S. Minneapolis of the Atlantic Transport Line July 25th, reaching London in time for the opening of the Congress. It is altogether probable that others will join Dr. Brenton in the direct trip to London.

Grows Better and Better Every Year.—Dr. L. A. Patrick, Snohomish, Washington, says in renewing his subscription: "Inclosed please find check for renewal of the Review. I cannot afford to miss a single copy. The Review is keeping up with the steady advancement of the profession and grows better and better every year."

SOME MECHANICAL FACTORS IN DIGESTION.

By Septimus Sisson, S.B., V.S., Professor of Comparative Anatomy, Ohio State University.

The digestive phenomena which are usually included under the above head comprise: 1, The reception of food and water; 2, the reduction of coarse food and its mixture with saliva; 3, swallowing and rumination; 4, the action of the stomach and intestine in moving their contents.

It is evident that anything approaching a full discussion of all of these topics would be not only impossible, but quite undesirable in a short paper designed for the consideration of readers who are presupposed to be conversant with the main facts regarding these phenomena. The attempt will be made here to deal with some factors concerning which conflicting views have been held or about which opinions still differ. Improved methods of physiological and anatomical study have rendered dubious, if not actually untenable, certain statements relative to the mechanics of digestion.

The mechanism of prehension may be determined without difficulty by direct observation of the process in the various domestic animals, and the functional differences in the various species may be correlated easily for the most part with the corresponding structural peculiarities. The taking in of fluids by drinking, suction, or lapping is also largely open to observation and not difficult to understand, although the muscular actions involved in sucking are somewhat complex.

In mastication the muscular actions are still more complex, especially in herbivora. In the ox, for example, the mandible is moved transversely, longitudinally and vertically, and is also rotated about a dorso-ventral axis passing through the temporomandibular articulation; furthermore combined movements occur. In addition there are movements of the cheeks and tongue, and changes of shape of the latter. The lips play a very small

part in mastication in animals with long narrow mouths, such as the horse and ox. In typical carnivora the process is reduced to its simplest terms and consists almost exclusively of depression and elevation of the lower jaw, sufficient to reduce the food to pieces of such size as to be swallowed. An exception to this general statement must be made, however. It is noticeable that in dealing with bones, the process is not at all so perfunctory; dogs chew bones pretty thoroughly, crushing them between their broad-crowned, tuberculate molars.

Two points in regard to the process of deglutition have been the subject of considerable controversy. One of these is the mechanism by which the passage of ingesta into the larynx is prevented. The apparent difficulty in this respect is aggravated in the case of the horse by the great length of the soft palate and the fact that the posterior pillars of the latter unite in arciform fashion over the aditus oesophagi. The following appears to be the most rational explanation of the process, and is in conformity with such direct observations as have been made. The soft palate is shortened and is raised so as to close the posterior nares. The pharynx is shortened and its oral end is dilated. The root of the tongue and the larynx are approximated, so the epiglottis is in intimate contact with the former. The vocal cords and the arytenoid cartilages are adducted so that the rima glottidis is closed, thus preventing aspiration of ingesta into the larynx. In addition the apical parts of the arytenoid cartilages are drawn forward and ventrally, bringing them close to the basal part of the epiglottis, so that these cartilages and the ary-epiglottic folds close the vestibule of the larynx. The bolus is projected or "shot," so to speak, through the pharynx, principally by an energetic contraction of the mylo-hyoidei. This is followed by a so-called "clearing up" phase, in which remnants which may remain are removed by the constrictors of the pharynx.

A remark may properly be made here with regard to a practical implication. A very important part of the swallowing process is the apposition of the root of the tongue and the epi-

glottis, which is followed by the return of the larynx to its resting position. It is evident that undue elevation of the head in medication per os in the horse for example is highly objectionable, since it stretches the muscles concerned in these reciprocal movements of the tongue, hyoid bone and larynx, and thus vitiates or inhibits the proper action of this rather complex mechanism. Fortunately the drench has not at all the vogue now which it had formerly in veterinary practice. In those cases in which this mode of medication still seems to be desirable or permissible, care should always be taken to determine whether the patient is capable of swallowing. If the muscular actions which are necessary for the safe transport of material through the pharynx are weakened or not properly co-ordinated, it is evident that more or less of any matter introduced into the mouth is likely to enter the larynx, and the practitioner should govern himself accordingly.

The second point concerning which differences of opinion exist is the mechanism by which alimentary matter traverses the oesophagus. It is evident that three factors would be involved in the process. These are: 1, The force exerted; 2, the physical character of the material swallowed; 3, the nature of the oesophagus in respect to length, calibre and structure.

It has been a common custom, in the absence of experimental evidence and observation, to explain many physiological processes on an anatomical basis. Thus the process of deglutition was divided into three parts, namely, 1, the action of the muscles of the mouth and tongue; 2, the transport of the material through the pharynx by the contraction of the pharyngeal constrictors, and 3, the passage through the oesophagus by peristalsis. In 1880 Falk and Kronecker(1) opposed this view of the process, and on the basis of observations of the action of the mouth and pharynx advanced the theory that deglutition is accomplished essentially by the contraction of the muscles of the mouth, and that oesophageal peristalsis is of minor importance. They believed that the pressure developed in the mouth was sufficient to force food through the oesophagus without peristalsis

of that tube. Kronecker and Meltzer(2) obtained confirmatory results by the use of rubber balloons, connected by tubes with recording drums. One balloon was placed in the pharynx and the other a varying distance along the lumen of the oesophagus. When water was swallowed, the increased pressure on the balloon in the pharynx was transmitted at once to the recording drum and almost immediately afterward the drum connected with the balloon in the oesophagus registered an increase of pressure. By these and other methods Kronecker and Meltzer concluded that liquids and semi-solids are squirted from the mouth to the stomach without the aid of the pharyngeal muscles or oesophageal peristalsis. Meltzer(3) has since shown that, after removal of the muscular coat of the cervical part of the oesophagus, a dog can drink milk and water in a normal manner even when the bowl is placed on the floor. These observers regarded the peristaltic wave which succeeded the principal act of deglutition as a sort of "clearing up" phase by which fragments that might remain were carried to the stomach. Later observations by means of the stethoscope led Meltzer(4) to decide that the movement of the food was checked a short distance from the cardia and that it was propelled into the stomach by the succeeding peristaltic wave some six or seven seconds later.

The possible sources of error inherent in the technique of the preceding and similar investigations led Cannon and Moser(5) to undertake observations on the movements of food in the oesophagus by means of the X-rays. This method excludes possible sources of error which may result from anaesthesia, operative interference, the presence of foreign objects in the tract, etc. It was desired, in addition to testing the results of Kronecker and Meltzer, which these observers explicitly stated held good only for liquids and semi-solids, to determine also the mode and rate of progression in the normal oesophagus of different animals of substances of various consistencies. Incorporation of subnitrate of bismuth with the liquids and solids used gave the necessary shadows for observations. Cannon's observations confirmed those of Kronecker and Meltzer with regard to the

swallowing of fluids in man. He found that "at each swallow the liquid was projected rapidly through the pharynx and well down into the thoracic oesophagus before it was lost to view." In fourteen normal persons Hertz(6) observed that fluid was "shot rapidly down the greater part of the oesophagus," and was then forced slowly into the stomach. The entire process occupied four to eight seconds, about half of which was required for the passage through the cardia. Cannon(7) found that in the dog liquids were "squirted for some distance along the oesophageal tube." Sometimes this rapid projection extended as far as the heart, and at other times only to the thoracic inlet. Further progress was slower but regular. In the cat fluid was projected in a similar way as far as the midheart region; here there ensued a pause varying from a few seconds to a minute or more, after which the contraction of the oesophagus slowly forced the liquid into the stomach.

Accurate physiological data with respect to the mechanism in the other domesicated animals are not available, but ordinary observation tends to support the view that the process is similar in them. It is evident that in the horse and ox liquid is squirted from the mouth a considerable distance along the oesophagus.

There appears to be a close correlation between the mode of deglutition and the histological structure of the oesophagus. Thus in the goose, the oesophagus of which has a muscular coat composed exclusively of unstriped muscle, fluid is swallowed by slow oesophageal peristalsis without propulsive action of the mouth. When the head is raised, fluid trickles into the oesophagus, and is transported by peristalsis, the rate being about the same as for solid food (Cannon, Coc. cit.). It appears that in mammals, when the mylo-hyoidei are paralyzed, the process of deglutition is similar to that of birds. In man the oral third of the oesophageal musculature is striped, the aboral third is unstriped, and the intermediate part presents a gradual transition from one to the other type. This corresponds with the slow contraction of the lower part of the tube as previously noted. A similar correlation exists in the cat as noted above. In the

dog, on the other hand, with an oesophageal musculature that is striped throughout, no lessening of speed was noted in the aboral part of the tube. If this correlation holds good the inference may be drawn that in the ox no diminution of speed would occur in the aboral part of the tube, while in the horse there would be a decided slowing of the rate of transmission from the base of the heart backward, and in the pig the retardation would occur near the cardia.

Solids and semi-solids are swallowed in a very different manner from fluids, except in the case of birds. Solid food is always carried along the oesophagus by peristalsis. Cannon (loc. cit.) observed in the dog that "the solid bolus was quickly discharged into the oesophagus, and descended rapidly for a few centimeters, sometimes nearly to the base of the neck; yet no pause was observed—the bolus simply moved more slowly." In the cat there was a decided retardation beyond the region of the heart; the bolus required three-fifths of the deglutition period to pass through the remainder—less than a third—of the oesophagus. The deglutition period in the dog averages about four or five seconds and that of the cat is about ten to twelve seconds. Hertz (loc. cit.) found that in man solids move slowly in the oesophagus; the period for well-lubricated boluses varied from eight to eighteen seconds, while a dry bolus may remain above the cardia many minutes. This shows the striking influence on deglutition of the physical condition of the bolus in this respect, and throws some light on the occurrence of oesophageal obstruction in horses which attempt to "bolt" imperfectly insalivated masses of dry food, such as chopped hay, chaff, etc. A well-masticated bolus passes along the cervical part of the oesophagus of the horse at a rate of about 35 to 40 centimeters per second—about one-fifth of the speed of liquids; it is probable that the rate is much slower from the base of the heart backward, but the writer has been unable to find any authentic observations in regard to this matter in the available literature. Semi-solids of the consistence of mush seem to be swallowed in much the same manner as solids, the rate of progress of the former being only slightly more rapid than the latter.

As an index to the force exerted by the oesophageal musculature it may be stated that Mosso found that dogs swallowed wooden balls which were loaded by means of a string and pulley with a weight of 250-450 grammes.

It is well known that control of ingesta ceases immediately when the material leaves the mouth; beyond this the action is entirely reflex and involuntary. The entire dependence of the swallowing reflex on afferent impulses from areas of the mouth and pharynx was shown by Wassilieff(8). A small sponge saturated with cocaine solution was swallowed and withdrawn by means of a thread attached to it. For some minutes he was unable to swallow, and saliva, which was secreted in large amount, had to be expectorated. The necessity of an adequate stimulus is clearly shown by attempting to swallow several times in close succession; as soon as the saliva has been cleared out of the mouth, the act of deglutition cannot be initiated, and becomes possible again only when saliva has accumulated or other material is introduced into the mouth. The most sensitive areas or "chief spots" from which afferent impulses arise to stimulate the swallowing reflex have been found by Kahn(9) to be in the course of the natural path of food from the mouth to the oesophagus. Accessory areas exist away from the direct path in places into which particles of food may accidentally be misplaced. In the dog and cat the chief spot is on the dorsal wall of the pharynx near the origin of the oesophagus; here the mucous membrane is innervated by the glosso-pharyngeus. Accessory spots are present on the pharyngeal surface of the soft palate, innervated by the glosso-pharyngeal and maxillary nerves; others are on the pharyngeal surface and base of the epiglottis, supplied by the anterior laryngeal nerve. The swallowing centre is in the floor of the fourth ventricle in front of the respiratory centre. The efferent fibres are chiefly in the mandibular, glosso-pharyngeal and vagus nerves; the last-named innervates the entire oesophagus. Cannon(10) found that in the cat the immediate result of section of the vagi was oesophageal paralysis, but that there was a secondary recovery in the part of the tube that

has an unstriped muscle coat. This phenomenon may be explained on the basis of the myenteric reflex, which is similar to that of the stomach and intestine, and is competent, when adequately stimulated to mediate peristalsis after loss of extrinsic innervation.

In discussing the mechanical action of the stomach consideration will be given first to the simple organ, such as that of the dog and man. The old idea of the churning up of the contents of the stomach was abandoned years ago, and our present conception of the gastric mechanism is very largely derived from the valuable contributions of Cannon,(11) who utilized the X-rays in his studies; the following statements are largely derived from Cannon's descriptions of his observations. This observer divides the stomach on a functional basis into two parts, cardiac and pyloric, between which is the incisura angularis—usually termed the lesser curvature. The fundus of the human stomach is defined as that part of the cardiac division which lies above a horizontal plane through the cardia. The pyloric part may be divided into the pyloric vestibule and the pyloric canal, the latter being about three centimeters in length. Cunningham suggested the terms "cardiac sac" and "gastric tube" to designate functional divisions of the stomach; this connotes the view that the former is a reservoir which gradually "feeds" ingesta to the tubular part as the latter discharges its contents into the intestine. When or shortly after food enters the stomach, peristaltic waves begin about the middle of the body of the viscus and move toward the pylorus; peristalsis begins at once when food enters the empty stomach, provided the latter is in a state of tonic contraction at the time. In the part toward the cardiac end or saccus caecus there is usually a mere tonic contraction. Thus the stomach assumes a tubular form with a pouch-like left extremity, as shown by Cannon's figures. The left extremity then begins to squeeze its contents into the tubular part. But it must not be assumed that the latter is merely or even chiefly expulsive in function. It has the important action of mixing the gastric juice with the food. This action is not due to antiperistalsis, but is

caused by ingesta being moved against the closed pylorus or a contraction ring and thus forced back. Thus the contents of the pyloric part are carried back and forth, and different portions are brought into contact with various areas of the mucous membrane. The ingesta in the left part may remain practically in statu quo for a considerable time, subject to relatively small pressure. The stratification has been observed to persist in the left end more than an hour, whereas it had disappeared near the pyloric end in ten minutes. The contents of the pyloric part had changed to the consistence of thick soup, while that in the left end had undergone no perceptible change, although of course subject to slow and merely superficial penetration of gastric juice. The discharge of chyme into the intestine is regulated by the pylorus which is the "keeper of the gate." The sphincter pylori is closed when food enters the stomach; it relaxes at irregular intervals and chyme spurts through the pylorus a distance of several centimeters into the intestine. Then it closes for a time and recurring gastric peristaltic waves sweep ingesta toward it; the contents are thus carried to and fro in the pyloric vestibule as before stated until the pylorus again opens. The most plausible explanation of the opening and closing of the pylorus is the theory of the acid control of the pylorus. This theory is that food of a certain degree of acidity coming in contact with the pylorus causes relaxation of the sphincter, and that the latter contracts when the acid chyme reaches the intestine. Bayless and Starling(12) have shown that the acid in the intestine stimulates the flow of pancreatic juice, so that the chyme is neutralized soon after leaving the stomach; thus the stimulus which caused closure of the pylorus ceases or is reduced, and the acid in the stomach is again able to cause relaxation of the sphincter. Much evidence has been adduced to support this theory. Addition of bicarbonate of soda to carbohydrate food delays the passage of the latter into the intestine; this is apparently due to the fact $Na\ HCO_3$ checks secretion of gastric juice and neutralizes its acidity. Conversely acid protein food is discharged much more rapidly than natural protein, although the manometer does

not indicate any increased intragastric pressure forcing the pylorus open. Inhibiting acidity causes retention of food in spite of strong peristalsis. Serdjukow found that discharge from the stomach could be inhibited indefinitely by repeated introduction of small quantities of acid solution or gastric juice through a duodenal fistula. Corroborative results have been obtained by Tobler(13) and Lang.(14)

The stomach has remarkable ability to adapt itself to varying amount of contents with little or no change of intragastric pressure. Thus Kelling(15) found in the dog the intragastric pressure (ca. 7-7.6 cm. of water) to be practically the same when the stomach contained 460 c.c. of material as with a content of 240 c.c.

The period of retention of food in the stomach and the rate of gastric discharge are affected by various factors, but limitation of space will permit only brief reference to this topic. The influence of chemical composition is shown by Cannon's observations on the cat. He found that carbohydrates began to emerge in about ten minutes, that the discharge was rapid and was usually complete in about three hours. Little or no protein left in the first half hour and the discharge was slow for an hour or more thereafter. Fat was slow in beginning to leave the stomach, the discharge was slow, some even remained after seven hours. Fatty food inhibits or at least does not stimulate gastric secretion and causes slow and weak peristalsis. Another important factor is the physical character of the ingesta. Water begins to enter the intestine as soon as it reaches the stomach; it may pass out in intermittent gushes or continuously. Cohnheim(16) found that water swallowed by the dog when the stomach was full passed along the lesser curvature, diluting only the contents of the vestibule, and pours through the pylorus. Further reference will be made to this in the consideration of the gastric mechanism, since it has certain important practical implications. With regard to consistency of ingesta it appears that this factor does not materially affect gastric discharge of carbohydrates. In the case of protein food dilution tends to cause more rapid

discharge; this is apparently due to reduction in the amount of material which unites with the acid of the gastric juice. Cohnheim (loc. cit.) found that in the dog a feed of 50 g. of finely chopped meat left the stomach in about an hour and a half, the discharge beginning in about 15 min., while the same amount fed in large lumps took almost an hour longer. Furthermore, the "easily digested," finely divided meat emerged largely in unbroken particles, while the lumps were almost entirely dissolved. This would seem to indicate that it is unwise to feed finely chopped meat unless the sole object is to "save the stomach work"—an end which evidently can be attained only by placing more work on the intestine. Variations of temperature of food do not, in healthy subjects, appear to affect materially for any considerable period, either gastric peristalsis or rate of discharge. Cannon and Murphy(17) found that high intestinal section and suture did not interfere with gastric peristalsis, but for almost six hours after recovery from anaesthesia the pylorus remained tightly closed—an excellent example of organic defence. It is evident that gas in the stomach may interfere with the movement of the ingesta and with discharge, even when gastric peristalsis is normal. The amount and position of the gas would be important factors. In the horse a moderate amount of gas (which accumulates in the saccus caecus) would have no material effect. In the ox the amount of gas in the rumen is normally kept within proper limits by eructation.

The mechanical action of the stomach of the horse is no doubt essentially similar to that of the dog, but it is evident that the profound differences in the character of the food, the manner of eating, and the structure and relative size of the organ would have their physiological corollaries. It is regretable that means have not yet been devised to make direct observations of these phenomena in the larger animals, such as have thrown so much light on them in man and small animals. Much information has been obtained, however, by somewhat less direct means, such as feeding experiments, and in this regard we are indebted chiefly to Ellenberger and to others who have worked in his laboratory.

A large part of the investigations of these workers deals with the chemical phenomena of digestion—a topic which is outside the purview of this paper. But observations have also been made concerning the arrangement of food in the stomach, the movement of ingesta in that organ, and the effect of drinking on the gastric contents and on gastric digestion. The methodology of these investigations naturally cannot be detailed in a short paper, but an attempt will be made to indicate the more important conclusions which were reached, and those who desire to go into the matter further will find in the appended bibliography references to most of the literature.

Previous to the epoch-making work of Ellenberger and Hofmeister(18) the current views of the digestive processes in man were regarded as holding good in such herbivora as the horse and ox, and the erroneous notion of the "churning" action of the stomach and consequent mixing of its contents was taught as occurring in the horse.

In the case of horses which are fed in the ordinary way the stomach is never empty and consequently has no "resting state" as is the case in man and the dog. Since gastric digestion is continually in progress it is reasonable to assume that movement of the gastric contents is also practically continuous, although doubtless the degree of activity would augment periodically in correlation with the times of feeding. It is interesting to note in this connection that the wall of the left sac is specially rich in elastic fibres, a structural arrangement which would enable the stomach readily to adapt itself to varying amounts of ingesta, and would also favor movement of the contents of the left sac toward the pyloric part. Since digestion is continuous, the question would naturally arise whether there is almost continuous passage of ingesta through the pylorus. So far as the writer is aware there are no experimental data on which an answer to the question could be based. It may be stated, however, that in dissecting-room subjects (hardened by intravascular injection of formation solution) the pylorus is not usually closed; the size of the opening varies, but is usually sufficiently large to allow the finger

to be passed through it. This fact is very significant, since sphincters in general are firmly contracted in such subjects. It would appear that Cannon's theory of the acid control of the pylorus would not apply perfectly to herbivora with relatively small stomach. It is known that in the horse part of an ordinary feed of hay and oats passes directly into the intestine during ingestion, and when any considerable amount of water is drunk most of it passes through the pylorus at once or in a few minutes.

The observations of Ellenberger(19) and Goldschmidt(20) showed that in the horse a stratification of the ingesta occurred in the stomach and persisted for hours during digestion. This was determined by withholding food from the subject until it could fairly be assumed that the stomach was empty or nearly so. Foods of different kinds were then fed in succession, *e. g.*, first hay, then oats, etc. The animals were killed at varying intervals after feeding and the stomach carefully removed and its contents examined. It is found that the food first taken passes into the most ventral part of the stomach, viz., the fundus gland region or body of the stomach. Succeeding masses formed layers on their predecessors, or piled up on, or settled into or around them, according to the physical character of each. It is self-evident that such stratification and segregation could not occur with finely divided semi-solids or liquids, such as bran-mash, gruel, etc. These results were corroborated and additional facts obtained by more recent observations of Scheunert(21) and Scheunert and Schattke.(22) who used in their experiments horses which were fed and watered in the manner usual in the German army. In order to obtain more precise results they adopted the ingenious method of differential staining of various parts of the rations. The animals were killed at different periods after feeding or watering. The stomach was at once carefully removed and frozen in conformity with the method introduced by Grützner(23). It was then sectioned frontally and its wall removed from the contents. In order to distinguish the remnant of previous feeds the animal was given water colored with malachite green in the morning previous to feeding. In this way

the contents of the stomach were colored sufficiently to be distinguished from food given later. It is to be noted, however, that the penetration of water into the stomach contents varies inversely with the amount of the latter and is also affected by the physical condition of the ingesta. (This point will be taken up again later, since it has important practical implications.) Following the watering the subject was given 750 gm. of oats and chopped hay colored red, followed by 350 gm. of the same colored yellow. It was then given 750 gm. of hay and was killed half an hour after the latter had been consumed. It was found that the remnant of previous feeds occupied about a third of the stomach and lay almost exclusively along the greater curvature in the pyloric and fundus gland regions. Upon this the red-stained food was spread in a thin layer largely in the left sac of the stomach, and upon this in turn the yellow food had been deposited. The hay was arranged somewhat differently, as might be expected from the difference in consistence between it and the ingesta which it followed. The latter was much softer and more watery, so that the hay forced some of the old contents along the lesser curvature to the pylorus. There was, however, no admixture of the various foods and the stratification was easily made out.

The amount of ingesta in the stomach previous to the morning feed appears to be subject to much individual variation and would be affected also by the character of the diet. Scheunert found that it may be a little more than 7 kg. This was observed in experimental subjects which were fed a ration of 1,500 gm. of oats and 200 gm. of chopped hay, which, together with the saliva mixed with it was estimated (on data derived from previous investigations) to weigh about 6.5 kg. The period of deprivation of food which must elapse before the stomach is empty is evidently quite variable. F. Smith(24) states that he found hay in the stomach fifteen and eighteen hours after being given, and on the other hand, under identical experimental conditions, found the stomach empty at the fifteenth hour. The writer has frequently observed in dissecting-room subjects which

have received no food for eight or ten hours that the stomach appeared to be about one-third full. In such cases the food is in the most ventral part of the stomach; the saccus caecus is contracted and contains a small amount of gas. In some cases there is a distinct constriction which corresponds in a general way with the demarcation between the non-glandular and glandular parts of the mucous membrane.

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(*To be concluded in August issue.*)

College of Agriculture University of Missouri has a session covering the dates from June 29 to July 24, 1914, inclusive, with a series of lectures on subjects relative to agriculture and livestock industry, with prominent lecturers listed from all over the country. We find from New York State a representative on the programme, to lecture the third week in July, on *Immunity and Disease Resistance*—Prof. Veranus A. Moore, New York State Veterinary College, Ithaca.

THE INTERCELLULAR FLUID AND ITS RELATION TO HEALTH AND DISEASE.

By Thomas B. Kenny, M.B., C.M., M.D., New York City.

We recently had the privilege of listening to two interesting papers on the "tissue medium" and the tissue food, respectively. The term "tissue plasma" the author has devised to include both products, the medium being the vehicle for "the food." We prefer to use the term intercellular fluid, because it seems to us to convey to the mind more expressively the relation existing between the cell and the pabulum which surrounds it, and in which it literally moves, lives and has its being. The integrity and the welfare of the cell depend entirely upon the condition of the intercellular fluid or tissue plasma. The physical organism is an aggregation of cells, held together by mutual attraction for a special purpose; and in its ultimate analysis the welfare of the single cell, the unit of life, is that of the whole. To live, to functionate, to reproduce, demand certain essential factors.

(1) The cell must receive nourishment to replace the waste which follows cell metabolism. Ceaselessly it transforms one kind of energy into another as it carries out the mandates of its functions. It takes up energy in one form and elaborates and transforms it into another, and unless the waste be replaced, depletion and exhaustion must ensue.

Cells are many and varied in struction and function and their individual requirements vary with their functions. Brain cells in the frontal lobes which convey impressions from the consciousness will necessarily require somewhat different substances for the performance of their functions than bone, hepatic or renal cells. The medium, therefore, from which they draw their sustenance must be capable of supplying each and every cell with just what it needs. Still more will we realize the importance of

this intercellular fluid or tissue plasma when we learn that it penetrates the minute vascular net works of all cellular elements, that the dendrites of neurons contain a similar fluid, and that the very contractions of the heart muscle or myocardium is due to a special secretion carried to its cellular element by the tissue plasma or intercellular fluid.

(2) The cell needs a vehicle into which it can pour its waste products; if not, it would be poisoned by its own emanations, the products of its metabolism.

(3) The cell must be provided with substances which will enable it to ward off attacks upon its integrity by deleterious products from within and from without. The medium which carries to the cell these defensive requirements is this same intercellular fluid or tissue plasma.

We, therefore, take the liberty of emphasizing what we said in a previous paper that the physician in treating disease faces biological, chemical and physiological problems in reference to this intercellular fluid and its relation to the pathological condition present. If the intercellular fluid be defective in quality or quantity, it will entail impaired function, which, if prolonged, will induce pathological change. Disease in its ultimate analysis has its inception *in impaired function.* So long as the cell is supplied with the materials needed for the proper performance of its function and those substances required for its defense against invasion, disease cannot exist, infection cannot hurt it. This intercellular fluid or tissue plasma, we find therefore, is not only a vehicle for food stuffs many and varied, for tissue waste, but it also is the medium which carries to the cell the many organic substances elaborated by various glands of the body as its armor of defense. If you will permit us we will bring this subject more clearly before you by reviewing briefly a few of the data which the monumental researches of Sajous and others have presented on the internal secretions and their bearing upon immunity. For the purpose we take the liberty of quoting freely from Sajous, Vaughan and others.

In the struggle for existence a constant warfare is being

waged, a ceaseless struggle in which the weaker is crowded out and destroyed. The organism, human and animal, exerts a constant vigilance against infection from without and from within. In regard to infection from within we have but to remember that the absorption of undigested and partially digested proteins from the intestinal tract *can be as noxious as infection from a living virus,* and *that foreign protein matter entering the blood stream and tissues can become injurious to the cells of the body, because every unbroken protein contains a highly poisonous group.* How injurious these may become has been shown by Loncope who induced nephritis in rabbits and dogs by repeated injection of horse-serum and egg-albumin. The immense importance which auto-inoculation and auto-intoxication play in the etiology of disease, and the production of many and varied symptom complexes which have no special designation of identification cannot be too strongly emphasized. Luckily for the organism, evolution has supplied it with a mechanism, the gastro-intestinal digestive apparatus, which protects the cells of the body by digesting the proteins prior to their entering the blood stream. This is accomplished by inducing radical structural changes through cleavage. It is a rare condition to find intestinal tracts which are working at par, and consequently our blood stream carries within it almost constantly partially digested proteid matter. To inhibit this self-poisoning, the organism must possess a ready means which will enable it to render nugatory the evil effects. If it were not so, the organism would in a short time be destroyed by the poisons generated within itself. It is this continuous self-poisoning engendered by our habits of life, want of rest, disregard for dietetic and hygienic principles, which makes us so easy a prey for foreign invasion, resulting in impaired function of the cell and its protective apparatus. These problems have induced investigators to search for the means nature employs to protect itself against its many enemies. Metchnikoff was the first to demonstrate that the white cells, or leucocytes, especially the polymorphonuclear forms, have the power of digesting and destroying bacteria. He has shown that they

devour all manner of foreign particles which enter the organism. In fact, the white cells have aptly been called the scavengers of the blood, because they remove any noxious foreign substance which may enter the blood stream or the tissues. A very simple experiment will illustrate the function of the white cell. Examine the web of a frog's leg with the aid of a high-power microscope. The circulation in the finer blood vessels can be followed distinctly and with interest. Meandering slowly along, hugging the walls in preference, will be noticed the white cells, comparatively few in number, gentlemen at leisure, killing time as it were. Take a drop of mustard oil and apply it to the web, and presently tremendous activity will ensue, the blood vessels will dilate and the blood current will become greatly accelerated. It would appear that some agent has now galvanized the white cells into action, for they rapidly increase in number, like soldiers summoned to the fray. Changing their shape, they pass through the walls of the vessels by diapedesis and in a solid phalanx surround that drop of mustard, thus forming a complete protective barrier around the irritated tissue. The products of the inflammation having been effectively dealt with, presently the parts will assume a normal aspect and the leucocytes return to their seeming inactivity. That these phenomena are present in actual pathogenic conditions has been demonstrated clinically in the acute infections, like pneumonia, in which we first find a sthenic stage wherein a pronounced leucocytosis occurs, followed by an asthenic in which the defensive factors become partially paralyzed, and the opposite condition, a hypoleucocytosis, follows. These data are of much practical value from a diagnostic point of view and also therapeutically. Leucocytosis varying from 3,000 to 10,000 will usually indicate in typhoid that perforation is about to occur, and a similar pronounced condition in appendicitis should suggest abscess formation. As we proceed further in our investigations, we find that later researches, especially those of Sir Almroth Wright, have shown that leucocytosis does not always indicate *phagocytosis*. He found that the white cells in the blood of typhoid patients

will sometimes ingest typhoid bacilli but sparingly and at other times with great avidity. Wright was therefore led to believe that there was something present in the blood which was necessary to induce phagocytosis. This substance he christened with the appellation opsonin, "to make palatable." In short, Wright clearly demonstrated that the presence of opsonin was needed to induce the leucocytes to undertake their phagocytic action. Bernard Shaw describes an opsonin aptly as "what you butter the disease germs with to make your white corpuscles eat them." Further researches have shown that if the leucocytes are removed from the blood plasma, that the serum contains within it substances which have an injurious effect upon micro-organism and destroys them. This shows that the blood serum itself has a bactericidal action. But nature has been lavish in her gifts, and a perfect system of protection has been devised to meet every requirement, and we find as we delve into the subject that some diseases, for instance, diphtheria, are overcome by the production in the blood stream of a specific antidote or antitoxin which neutralizes and destroys the effect of the toxins, but which has absolutely no action upon the micro-organisms themselves; in fact, excellent cultures of the diphtheria micro-organism can be obtained when diphtheritic antitoxin serum is used as the culture medium. The defensive factors would seem inadequate, however, if nature did not provide also a means whereby the leucocytes would be assisted in getting rid of the injurious micro-organism, and we find that the blood serum contains certain substances, known as *bacteriolysins,* which have the power of digesting and dissolving bacteria. So far we find the organism is provided with *leucocytes* to consume and devour bacteria and noxious material, *opsonins* to induce the white cells to function properly, *antitoxin* to overcome the toxins generated, *bacteriolysins* to assist the phagocytes in removing the offending micro-organism, and we may be led to believe that every desideratum has been complied with. But we find as we proceed in our investigation that yet another chemical product is poured into the blood stream which has received the name of *agglutins,* possessing the

power of inducing bacteria to clump together, so that they more easily fall a prey to the phagocytes. We find therefore that for every infection the organism is supplied with five special agents, known as antibodies, for combating the condition, and these differ in character with each specific micro-organism and infection. The antibodies required, for instance, for the cure of typhoid fever are useless for diphtheria.

We are healthy when our organism is capable of efficiently inhibiting the constant infection from within and from without to which we are subjected, because of the antibodies which it produces. We become unwell when the antibodies because of some inhibiting factor are ineffectively produced. Immunity consists then of the presence in the blood streams of antibodies which are capable of destroying invading bacteria, and neutralizing toxins generated, be the primary infection from within or from without.

Very interesting as all these facts are, they do not tell us how and where the antibodies are produced. These cannot arise *de novo*, and their presence in the blood stream clearly shows that they have their origin within the body itself, and that somewhere within the organism of man and beast there must exist an apparatus for their production. The work of Sajous and a host of other investigators has shown that it is to the adrenal system we owe our immunity to disease, to toxins chemical and biological. This system consists directly of the pituitary body, the thyroid gland and the adrenals functionally united; the latter, as you know, are also known as the suprarenals and are superimposed one upon each kidney. Indirectly the spleen and pancreas take a minor rôle. Anatomical research has shown that the adrenals have a direct anatomical connection with the anterior portion of the pituitary gland situated at the base of the brain. For convenience we will refer to it for the future as the anterior pituitary body. The connection is through the solar plexus and splanchinic nerves and the cervicothoracic ganglia of the sympathetic. Numberless experiments have demonstrated that the anterior pituitary body is the governing centre of the

adrenals. What then are the functions of the adrenal system? They are vital to the welfare of the organism, because the system

(1) controls *all the oxidation* processes of the body and therefore all metabolic processes;

(2) it protects the body against disease.

The adrenal system actually maintains physical life, because it is the guardian which endeavors to preserve it by increasing its functional activity when poisons or deleterious substances of any kind threaten its welfare. The adrenals control all the oxidation processes, because they secrete a substance which enters the circulation through the suprarenal veins and so becomes intimately mixed with the venous blood in the inferior vena cava. This secretion possesses a very marked affinity for oxygen and as the venous blood is circulating in the capillaries of the alveoli of the lung, it compels it to take up oxygen from the air contained within these alveoli and to discharge its carbon dioxide content. It also endows the hemoglobin molecule with its power to absorb oxygen and to be reconverted into oxyhemoglobin. Furthermore this adrenal secretion is an oxidizing substance which is the main factor *in all the functional processes of the body*. The red cells are mere carriers or "pack mules" laden with oxygen which they serve out to the plasma. It is the plasma which is the real distributing agent and the medium which delivers oxygen directly to the tissues. When the venous blood enters the lung, it contains adrenal secretion, but as it passes out the secretion, because of its affinity for oxygen, becomes changed into a combination in which both substances lose their identity. Before entering the lung the secretion possesses a marked affinity for oxygen, whilst the compound after leaving the lungs, on the other hand, has a marked tendency *to part* with its oxygen when in contact with bodies which have a greater affinity for the gas. This oxidizing substance is not a theoretical conception, for its presence has been demonstrated by Sadkowski, Schmiedeberg, Jaquet, Abelous and others. This oxidizing substance is the underlying factor in all the *oxidation processes of the body*. It has

been aptly described by Sajous this combination of adrenal secretion and oxygen as the "physico-chemical agency through which cellular metabolism is sustained during *passive* functional activity and increased during *active* functional activity." The oxidizing substance, therefore, is a physiological immunizing factor which is constantly functionating, because it acts as a prophylactic agency by converting certain toxins, especially products of metabolism, into benign and eliminable substances by submitting them to an oxidation process. It is a stimulant for all functions of the organism, and furthermore it is an important constituent of antitoxin. By its effects antitoxins submit to oxidation all toxins possessed of sufficient affinity for oxygen. It follows therefore that the adrenals play an important part in the life and welfare of the organism.

We have briefly mentioned the important rôle which leucocytosis and phagocytosis play in assisting the organism to overcome the invasion of bacteria and toxics, and we now propose to briefly inquire into the relation existing between these phenomena and the adrenal system. It has been demonstrated that leucocytosis can be observed after active exercise, massage, following a bath, from the effects of drugs and from the toxins of disease. Researches by Besredka and other investigators have shown that the activity of all "*physiological protective processes and the production of leucocytosis,* etc., *results from over-activity of the adrenal system,* from pathogenic micro-organisms, poisons, foreign substances, drugs, the products of metabolism, if these enter the blood stream in sufficient quantities." Over-activity of the adrenals, therefore, is the inciting factor of leucocytosis, and we may safely assume of phagocytosis and its complement, the production of opsonins, etc., and inversely insufficiency of hypoleucocytosis and an inefficient and poor opsonin content.

We have mentioned that antitoxins are generated in the system, and their special function is that of antagonizing toxins.

Do the researches into the functions of the adrenal system give us any trace as to the formation and composition of these

antitoxins? They have shown that antitoxin consists actually of three substances, trypsin, globulins and adrenal oxidizing substance. The secretions from the spleen and pancreas unite and form a powerful proteolytic ferment which converts trypsinogen into trypsin. Part of the trypsin supplied to the intestinal canal passes into the splenic vein as an internal secretion and thence by the portal vein into the general circulation. Trypsin has the power to destroy toxic albuminoids secreted by bacteria, proteids, toxalbumins, vegetable poisons and venoms. A globulin—fibrinogen—also plays an important part, and by its action all albuminoids are converted into benign products in the blood. The third substance is the adrenal oxidizing compound, which is found in the blood after the adrenal secretion in the venous blood has passed through the lungs, and which we referred to earlier. Trypsin only becomes active when it is combined with certain proportions of fibrinogen and oxidizing substance. The neutrophiles or wandering phagocytes ingest proteid in the intestinal canal; they pass through the villi and mesenteric veins and, reaching the portal vein, absorb trypsin, by means of which they convert proteids into peptones, mysinogen and fibrinogen, all of which are globulins, and distribute these to the tissues, muscles and the blood itself. The combination of globulin proteolytic ferment and the oxidizing substance from the adrenals combine and form antitoxin, which has the power to convert albuminoid poisons or toxins into harmless products. The combination of the three agencies, *trypsin, globulin* and *oxidizing substance, will vary just as the molecular structure of each toxin varies and combine into the proportions needed to neutralize the particular toxin.* The antitoxin for one disease will not serve to neutralize, as you know, the toxins of any other, each inducing the formation of its own specific antitoxin and antibodies. Is it odd, therefore, if vaccine therapy has proved on the whole disappointing? A stock vaccine can be but an inefficient substitute for the actual existing factor in the production of antitoxins or antibodies, etc. Does it not show why an autogenous vaccine will be successful when a similar stock vaccine fails, and it shows the

folly of those shotgun vaccines with a hit or miss object which flood the market? Such a measure is as rational as the shotgun prescription. It also explains the excellent results which follow the proper application of Duncan's autotherapy in acute as well as in chronic diseases, in which the vaccine employed is the unaltered poison generated by the patient himself, administered *secundum artem.* With Duncan's procedure we closely approximate nature's methods. We thus find that the adrenals are necessary agents in the production of antitoxins. What is the function of the thyroid gland in its relation to the adrenal system? *The thyroid sustains the functional activity of the anterior pituitary body by means of its secretion,* which, as you are aware, is iodine in organic combination. Pathological phenomena will follow excessive or deficient production of thyroid secretion, for instance, exophthalmic goitre and myxoedema.

Connected with the adrenals intimately is the posterior or infundibular portion of the pituitary gland, which Berkeley, Howell and other investigators have shown to be the *chief functional centre of the nervous system.* It is also the centre upon which all emotions, shock (be they psychical or traumatic), excitement, depression, react. These stimuli can induce impairment of its functions and the production of pathological phenomena; furthermore the great importance of this portion of the gland will strike you when you remember that it is the *co-centre with the anterior portion in sustaining the cellular metabolism of all organs, because it governs their actual functional activity through the nervous system,* and the anterior portion, as we have previously remarked, ensures oxigenation of the blood through the adrenal system. This function of the posterior pituitary explains interesting data in reference to the psychological factor in disease, which we refer to later. This posterior pituitary, so sensitive to external impressions, is likewise very easily influenced by poisons, drugs, pathogenic agencies, directly or indirectly. Standing sentinel, this guardian of our welfare, insignificant in size, is sensitive to every impression, to every stimulus. Let any invasion from within or from without, no

matter how slight, threaten the welfare of the organism, and it will immediately sense the presence of the invading elements, promptly telegraph orders to the adrenal system, which in turn will respond to its mandates and elaborate those defensive factors upon which the organism, human and animal, depends for its continued existence. The posterior pituitary gland, which has been aptly described as "the somatic brain," is as it were our guardian angel, and Sajous and his co-workers are justified in teaching, therefore, that the pituitary gland is the *governing centre of the vital processes.*

These researches are intensely interesting, but you will naturally inquire, what practical value do they bear to disease, its treatment and cure? We answer that interpreted in the proper light, the relationship is vital, because these researches into the functions of the adrenal system demonstrate that *vital resistance* and its phenomena in general disease are to be ascribed to *fluctuations in the functional activity of the anterior pituitary body, overactively increasing metabolism and the activity of all the functions of the organism, diminished activity reducing the quantity of adrenal secretion served out to the economy and lowering proportionately the activity of all the vital processes.* For instance, overactivity will give rise experimentally to exophthalmic goitre and insufficiency to myxoedema, as we have mentioned previously. The investigations justify the conclusion that the symptoms of Asiatic cholera are induced because of the effects of the *toxins* liberated by the cholera micro-organism upon the anterior pituitary body. Experimentally, insufficiency is found in cholera infantum and other intoxications. Auto-intoxication and its train of symptoms is due, we may be permitted to believe, to the absorption of unchanged proteids into the blood stream, which induce abnormal stimulation of the adrenals or if pronounced insufficiency. It is thought that the convulsions in tetanus are not due to the direct action of the bacterial toxins upon the spinal cord, but to their action upon the adrenals, inducing insufficiency, and consequently excessive accumulation of waste product, the end products of defective oxidation processes. The practical application of this belief we will refer to later.

Does it not also explain the symptoms of anaphylaxis, which really is nothing more than a paralysis of insufficiency of the adrenals. The adrenals have been rendered oversensitive, and a further dose of the remedial agent has been sufficient to paralyze the system. Researches with thyro-iodine have shown that the action of *any poison,* chemical or biological, introduced into the blood stream, depends for its effects upon its action on the anterior pituitary body. It stimulates the gland to overactivity or depresses it and produces inactivity, partial or in whole, and increasing or reducing the secretion from the adrenals and therefore of the oxidizing substance in the plasma. Likewise symptoms of infection or toxaemias are produced; the evidence shows to overactivity or insufficiency of the adrenals. When we come to consider the effect of the remedial measure to be employed in treating disease, the experiments carried out demonstrate *that the physiological action of drugs is due to their action upon the anterior pituitary body.* Digitalis will illustrate the correctness of the data. Clinical researches have demonstrated that seven or eight hours after an injection of digitalis a leucocytosis follows, varying from 20 to 50 per cent. in extent. We have seen that leucocytosis is due to stimulation of the adrenals, and therefore we are logical in assuming that the digitalis leucocytosis is really due to the effect of the drug upon those glands. The value of digitalis in the treatment of infectious diseases at once will strike you. Furthermore it has been found that the adrenal secretion exerts a pronounced stimulating effect upon the heart muscle, increasing powerfully its working power; consequently digitalis by stimulating the adrenals will by increasing the output of adrenal secretion be of much value in increasing and supporting the efficiency of the heart's action in disease. But in this connection it is well to remember that an agent which can stimulate, injudiciously used will overstimulate and induce insufficiency. Iodine, called by Sajous "nature's own remedy," because it is the chief constituent of the thyroid secretion, is of value in secondary syphilis, because it has powerful stimulating effects upon the adrenal system. Is there any drug so valuable,

so universally employed in numberless affections with such good effect? In fact, when in doubt what drug to employ, nine times out of ten the physician will use iodine. Think for a moment of the array of diseases for which it is recommended, from gummata to arteriosclerosis, and you will now admit, perhaps, that the empirical use of this drug has a solid foundation in fact, namely, its pronounced action upon the adrenal system. Mercury experimentally has been found to produce its results, because of its action upon the adrenals, insufficiency following its use if pushed too far, salivation being a primary symptom of the insufficiency. Tuberculin, that two-edged sword, produces its deleterious effect, because it so easily and powerfully induces overactivity and insufficiency of the adrenals. Vaccines, autogenous and stock, and effects obtained by autotherapy, are due to the same stimulation of the adrenals, overdoses producing paralysis or insufficiency. Referring once more to tetanus, bromides and antispasmodics are used to control the dreadful tetanic convulsions, but they really only serve to *depress* further the activity of the adrenals and increase the insufficiency. The very opposite treatment is indicated in the light of these researches. Remedial measures should be employed to reawaken the inhibited adrenal system to renewed activity. The splendid results which have followed the treatment of tetanus by the carbolic acid treatment of Baccelli, when carried out *alone* and *in doses no larger than he recommends,* bear out the contention. His results have been striking and immeasurably superior to any other. Why? Because carbolic acid powerfully stimulates the adrenal system to action and induces such efficient oxidation that prompt oxidation of waste products follow when judiciously employed. In the treatment of malaria this same investigator has produced startling results in the treatment of pernicious malaria by the use of intravenous injections of quinine, because quinine powerfully reawakens the functional activity of the adrenals by its immediate and direct action upon the glands when used by this method, an effect impossible to obtain by oral exhibition. The importance of the investigations dealing with the adrenal system

and its functions may well be illustrated in the treatment of pneumonia. In sthenic stage of this disease we find a full, powerful heart action, leucocytosis, a fever which really is a protective process having for its purpose the conversion of pathogenic elements into waste products by cleavage and oxidation. The adrenals are stimulated actively, and the patient usually runs greater risk from the physician than from the disease, because in his anxiety to do something he is as likely as not to use some drug which will produce overactivity and insufficiency. In this stage of the malady there is nothing so harmful as meddlesome treatment, because it is more than likely to produce insufficiency of the adrenals. In this connection the worse offender is the ignorant and injudicious user of bacterial vaccines; the next, the meddlesome allopath, and the least harmful, the homeopath, because his remedies are not powerful enough to induce insufficiency. In the second or asthenic stage the symptoms give a true picture of adrenal insufficiency, and we must bend all our energies to stimulate the adrenals which are now more or less paralyzed by the toxaemia, and our measures must all have for their aim the use of agents which will reawaken the adrenal system into activity. If you recollect that digitalis produces leucocytosis, because of the hypoleucocytosis which now is present, this drug is indicated, but as it requires 24 to 36 hours to act when used orally we must resort to injection, hypodermic or intravenous. Not only will it induce leucocytosis by its effects on the adrenals, but it will increase the power of the heart by its direct action upon the myocardium. But be careful not to overdo it, because the end will be insufficiency. There are other drugs, such as citrate of caffeine, adrenalin, strychnine, strophanthus, etc., which can be likewise employed with excellent effects when used *secundum artum*. The researches therefore of Sajous, Oliver, Shafer, Sadowski, Jaquet and a host of other investigators have compelled these investigators to conclude that when the proportion of the majority of drugs, toxins, bacterial and chemical, toxalbumins, etc., do not exceed a certain quantity, the adrenal system *is stimulated* to action, but when *excessive* it is *inhibited* or *arrested* and rendered insufficient.

We have, perhaps, exceeded the limit of your patience, and you may well ask what has all this to do with the intercellular fluid or tissue plasma. We reply, everything, *because the efficiency of the adrenal system depends entirely upon the character of the intercellular pabulum or tissue plasma furnishes to these glands.* It is through this fluid or tissue plasma that the cells which comprise the glands are furnished with the materials they need for their nourishment and the materials they use in elaborating the various internal secretions. If the intercellular fluid be poor in quality, the nourishment and materials supplied will be insufficient and lead to insufficient function. Furthermore the toxins, the drugs, etc., reach the cell via the intercellular fluid, and so do the defensive substances, and therefore when we come down to the ultimate analysis, the condition of this fluid is of immense importance to the welfare of the whole organism. Not only must the intercellular fluid be of good quality, but it must be supplied in proper quantity, and this cannot be effected, unless a mean pressure exists, as Beates has suggested, between the arterial system and the venous system. Equally important is the velocity with which the intercellular fluid circulates intercellularly, because it gives up its contents to the cell and takes away its waste products and its end products. It must be normal in rate, not too slow, nor too fast. Thereby to enable the cell to be properly nourished to functionate physiologically, to resist pathological influences and to prevent perverted function, there must exist *circulatory equilibrium.* If that circulatory equilibrium be absent, it must be restored and maintained, and this is an important principle of treatment, not only in nutritional diseases, but in all diseases. We must employ measures which stimulate the heart to increased working power, increasing the force of the heart beats and the propulsion of blood through the blood vessels, and the intercellular fluid in its flow intercellularly.

Our object in presenting this very inefficient presentation of a very important subject has a twofold purpose: first, to illustrate to you in a practical way the importance of this intercel-

lular fluid or tissue plasma; secondly, as a partial reply to Dr. Rogers. We contend that the physician must be both scientific and practical, and by the term "physician" we include every person who by his training is qualified to treat disease. We were impressed at the last meeting by the expressions of opinion in reply to the paper, for they seemed to us in a measure to stultify the importance of your calling and the work you are daily engaged upon. If it be necessary that a physician who intends to devote his life to the treatment of human beings should spend four years, and in some countries five and six years, in medical studies to fit him for practice, surely those who intend to give their services to the care of sick and suffering animal life should require the same standard of efficiency. The human patient assists us in our labors by intelligent description of his symptoms and by his co-operation. We have, as our valuable assistance, the psychological factor, and to show you how important this may be in the treatment of disease, we ask your indulgence to briefly review the latest investigations into shock and its causation.

Crile, of Cleveland, by a remarkable series of experiments in the laboratory on animals, has been able to produce the phenomena of shock experimentally, and he has shown that the animals most liable to shock were those in whom the presence of bodily danger *was capable of producing the phenomena of fear.* He has demonstrated that shock follows injury, traumatic or psychic, in those animals which possess the most highly developed power of associated memory, and that the greatest damage is to be found in the brain cells. Animals exhausted by fright and prolonged physical trauma show changes in the brain cells, ranging from slight alteration to complete deterioration and destruction. The result of his experiments have ocularly proved that psychic stimuli when pronounced can so overstimulate the brain cells that exhaustion follows in ratio to the degree of fear induced. By eliminating the dread of the approaching operative ordeal he has reduced the occurrence of shock to an insignificant factor. This does not comprise the whole of his theory

of kinetic shock and anoci association in the production of surgical shock, but we cannot enter into the other aspects, as they have no direct bearing on our subject. The results of Crile's researches have compelled him to assert emphatically that the mind may cause diseases other than the mental. Emotional conditions are capable of inducing variations in the composition of the secretions of the body, so much so that the activities of the organism can be greatly affected. He asserts with proof that psychic stimuli in the form of emotions *can increase the secretion of the adrenals, of the thyroid and of glycogen, and an increase in the power of the muscles to oxidize glycogen.* These body activities are accompanied by accelerated circulation and increased temperature. Crile goes so far as to show that emotions may so change the composition of saliva as to induce pyorrhea alveolaris. " Chronic emotional stimulation may fatigue or exhaust the brain and may cause cardio-vascular disease, indigestion, Graves' disease, diabetes, insanity." These are Crile's own words, and his conclusions are based on laboratory experiments, and no stronger proof of the importance of the psychic factor and its relation to disease, its cause and treatment, can be advanced. But there is also the positive side of this psychic question, the optimism of the patient, his faith in the remedial measures, his belief in his physician; these play a most important part in the cure of disease.

The veterinarian, however, obtains little aid from the psychic factor, and he has practically to depend entirely upon his own intuition and his training. Can he adequately face the problems which meet him every day, unless he have a good, sound knowledge of both scientific and equally so of practical medicine? A correct knowledge of physiology is necessary for the appreciation of pathology, a correct appreciation of the physiological action of drugs for their proper therapeutic application. A working knowledge of the more precise and scientific methods of clinical diagnosis is a *sine qua non* to the solution of the diagnostic problems which face us all every day. Gentlemen, it is only those of us who have had the opportunity to be familiar with the post

mortem room of a large hospital, and who have had opportunities to compare the diagnosis with the autopsy findings, who can realize what a merciful repository the grave is to the reputations of eminent physicians and surgeons. For seven years the speaker, as a medical officer in his country's service, had among his duties to perform a large number of autopsies; many of these were upon patients of his own, and he assures you that his pride was frequently humbled in the dust, and his self-complacency and esteem became a minus quantity. It is only thus we realize our deficiencies, our limitations and the tremendous responsibilities we assume when we undertake the functions of our office as physicians, and how morally criminal we become when we approach our duties inadequately equipped for the services we offer.

We are all members, you and I, allopath, homeopath, veterinarian, of one great brotherhood, whose mission is the cure of disease, the amelioration of suffering and pain. The day, let us hope, is not so far distant when the sectarian differences will cease to exercise our minds, and the physician will be an "omnopath," ready to employ every remedial measure which will help him in the treatment of his patient, be it man or beast. You may think us visionary, but we refuse the impeachment, because we believe, that your duties, gentlemen, are in a measure as sacred as ours, your responsibilities relatively as great, for every brute beast is one of God's creatures, pawns in the Divine Architect's scheme of evolutionary progress, and their place, no matter how humble and insignificant, is therefore in its measure of much importance in its relation to the welfare of the whole.

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PROF. SISSON'S ARTICLE ON SOME MECHANICAL FACTORS IN DIGESTION will be continued in the August issue, beginning with the interesting question of *The Effect of Watering on the Stomach Contents, and the Transport of Water Through the Stomach and Small Intestines.*

OSTEOPOROSIS IN HORSES.*

By A. C. Wight, D.V.M., Pittsburg, Pa.

By osteoporosis is meant a disease of the bone, characterized by a diffuse, rarefying *ostitis*. This disease is encountered sporadically throughout the country, but is especially prevalent in this vicinity (Pittsburg, Pa.). It is becoming of great importance; the loss annually to the team owners from this one condition being conservatively estimated at $10,000. It affects animals of all ages, in all conditions of stabling, and without regard to the feed used.

I will not trouble you with a description of the histology, pathology, etc., but will try to confine myself to the detailing of some clinical observations which will give an idea of the prevalence of the disease, how we run across it, the outcome, possible mode of transmission, and any peculiar incidents which may come to my mind.

As to cause, I agree with those observers who have thought that the causative agent would be found to be a bacterium. My observations have led me to believe that this, and not food, environment, etc., is what will be found to produce this trouble.

In the first place, we find affected only those animals which have been in the city for a period of at least two years. We have never had a case in a horse which had been here a less time. Age has apparently no influence upon the susceptibility, as we find it as much in young animals as in old ones. We have never had a case in a mule.

Secondly, the habitation very evidently has no connection as a possible cause, as reported by some, as we find it alike in first-class private stables, in horses kept in cellars under the worst possible situation, in boarding stables, in the fire department

* Reprinted from the *Veterinary Alumni Quarterly*, Veterinary School, Ohio State University.

and the department of public works, and in fact any and all circumstances.

Thirdly, feed appears to me to have no influence as a direct causative agent, although it may be a factor in the progress and spread of the disease in an animal already infected. Bran has been given as the cause, but I have seen horses affected that had never had bran, at least not for a long time. Horses have developed the trouble when fed on any or all of the common horse feeds that you might care to mention. Some support the argument that feed is the cause by showing that when a horse is taken off that feed and put on some feed as alfalfa and molasses, very often he shows an improvement. I am inclined to the opinion that the improvement noticed is a result of the fact that the new food does not have to be chewed so much as the oats and bran (you know the horse's jaws are very tender and he eats slowly and carefully and does not chew any more than he has to) and is more easily assimilated, and therefore raises the body resistance to the progress of the malady, thereby producing stasis, or partial recovery, instead of supplying any new elements in which the former feed was supposedly lacking.

Fourthly, the water. Here we find a medium which cannot be so easily dismissed as a probable source of the trouble. It is the one thing, exclusive of the air, which all the horses affected with osteoporosis have in common. It is my belief that there is something about the water, either bacterial or else a deficiency in composition, which causes all the trouble. It is known that there is not a large amount of the solids taken up by the body which come from the water ingested, but that the body depends for minerals upon the absorption of complex chemical compounds from the organic foods.

This brings us to bacteria, and the probability of a bacteria being the cause of osteoporosis. Many theories can be advanced to support this statement, and much clinical evidence can be so construed as to point in that direction. In the first place, we have a disease which is very prevalent in some locations and unknown in others. Methods of feeding in this country are very similar

in any of the large cities. The food material comes from all parts of the country to these cities, so that if the food was the cause the disease should be equally common over the country. This is not the case.

Water has not the same mineral content in various parts of the country, but as I have said before, there is little mineral taken up by the body from the water. Many animals have nothing but what is practically distilled water. Still, the water the horses get could easily contain specific bacteria, capable of exciting this disease in susceptible animals.

Stabling conditions are very similar in all cities. In all there are good stables, and others with very bad sanitary conditions. Therefore, as some authors state, the same neglect should bring about osteoporosis, no matter where found.

In this city there are stables from which diseased horses are constantly being removed, and there are others where it is never seen, or has not appeared as yet. Then there are stalls in stables which are constantly yielding their quota of cases, yet other stalls in the the stable appear to be entirely innocuous. For instance, there is one stable from which three horses have been taken in six years, without another case being seen in any other stall (this stall, by the way, is next to the heater), and another stable where four were removed in seven years (this stall is also next to a stove).

A stable of twenty-five head had been losing from three to four horses a year, and others in the stable were seen to be affected. These horses were fed on oats, bran and all the hay they wanted. The stable was clean and well ventilated. Treatment in this case was to remove all horses which showed any signs of being affected, and the thorough disinfection of the building. The feed was changed to cut hay and molasses and alfalfa feed, and no cases have recurred since.

A small Italian boarding stable loses two or three head yearly, notwithstanding the fact that they feed largely alfalfa feed. Another stable across the street is similarly situated.

Symptoms.—The first thing that usually attracts our atten-

tion to the horse is the fact that he has a not easily diagnosed lameness, or one that centers in a complex mechanism, as the stifle or fetlock. This usually responds to treatment accompanied by rest, but in a short time he is lame again in a different part. I am frequently told that a case of lameness has been diagnosed by another veterinarian as rheumatism and treated as such. This treatment cures the supposed rheumatism for a time, as all these cases get all right again for a time if they are rested. But when he is worked again the "rheumatism" recurs. I am firmly convinced that many, in fact I am tempted to say nearly all, of the cases in the horse which are diagnosed as rheumatism are nothing more or less than osteoporosis, mayhap in an occult form, and I would earnestly advise that in *every* such case the possibility of the presence of osteoporosis be remembered and an examination made to exclude that condition.

Another common reminder is that the owner wishes the horse's teeth dressed as he is falling away in flesh, and does not eat rapidly. In some communities the horse's temperature is taken as a precautionary measure, but here we immediately examine for osteoporosis as a matter of routine.

Goneitis is commonly seen in a marked case, and is very often the only thing the matter with the horse that a veterinarian who has not seen cases of this kind can find wrong. I have shown cases to out-of-town veterinarians for examination without giving them a hint as to the condition, and the goneitis was all they could see. Swelling of the face which is supposed to be one of the marked diagnostic features is present in only a small portion of our cases, probably because we usually find the case before it has advanced to that point, which is the beginning of the end.

Prognosis.—Very advanced cases are hopeless and should be destroyed. If they are able to walk, they should be sold for whatever they will bring, as they are liable to break down at any moment. An advanced case was kept in idleness in the hope of shaping him up a little and then sent to the auction. He broke down in both front feet as he was being led home by his new owner.

A horse which had been standing in the stable, being treated by a veterinarian for a supposed shoulder lameness, was taken out by the owner in a time of emergency. He went about half a mile when he became very lame in the right fore limb. He was returned to the stable, and as he was going up the gangway the sesamoid bones of all four legs gave way. Upon post mortem, they were found to have been crushed as if put on an anvil and hit with a hammer.

The prognosis in horses if in fair condition depends entirely upon the future treatment. I have seen cases that have stayed in the city and have given efficient service over a period of years, others that soon died, and still others that did neither, so I am never sure what one is going to do. One thing is certain, if the diet and care is not changed, or if the horse does not leave town, death will ensue in from three months to a little over a year. I have one horse from an Italian stable that has shown thickening of the face, thickening of the lower jaw, goneitis, etc., for two years, and yet at the present time he is none the worse, and is working every day.

I usually give a favorable prognosis in those cases which can be gotten out of town. Some of those cases never lose a day after they leave the city. For instance, one horse that was in the fire department, and which was condemned because he could not make a run without being lame for weeks afterwards, was sold to a dealer at auction. He shipped him to Buffalo, and from there to Boston, where he was put into the fire department, and at last accounts was still giving good service and apparently sound. Another horse went twelve miles into the country to a pumping station, worked there two years, and was returned to the city. The disease which had been, as one might say, hibernating, at once returned and death ensued in three months. The common story is, though, that horses showing the first stages of the disease can be sent out of the city and expected to give good service, and become free from the trouble, although the swelling will not entirely disappear.

The *course* is anywhere from three months to a year and

a half from the time that the diagnosis is first made till the case either breaks down or has to be destroyed because of the impaired physical condition.

Treatment.—This consists in all cases which are not removed from the city in the feeding of alfalfa feed and molasses, and alfalfa hay, and the disinfection of the stall. As I previously stated, I do not think that this gives the horse any elements that he lacked before, but merely relieves the tax on the digestive organs, and raises the resistance. This has given very good results in a multitude of cases, and is to be recommended in all cases where removal is not possible. We had one case where a horse was removed merely from one stable to another in the city here, with a prompt increase in the physical condition and without any change in the feed at all.

Medicinal treatment seems to have little or no effect although arsenical preparations are sometimes given in the hope that they would help bring about a condition of stasis in the progress of the disease.

Always advise an immediate sale when this trouble is diagnosed.

Summary.—I consider osteoporosis to be a disease of bacterial origin, the spread being through some intermediate agent and not by direct contact. In this city our suspicions are directed towards the water, but no investigations have been made in that direction. Feed and stabling conditions certainly have no influence, and neither one can be, in my opinion, the direct causative agent.

We have never seen a case that has not had at least two years' possible exposure to the infection agent, as evidenced by the fact that all cases had been in the city at least that length of time.

Treatment consists of either endeavoring to raise the general resistance, or to remove the animal to a new habitat.

Most of the veterinary literature I consider to be worthless as to the etiology of this disease, and the treatments as propounded by the various authors are of no avail.

There is here, I think, a great opportunity for a bacteriologist to give us the exact etiology, and from what I can see a vaccine which will allow us to treat osteroporosis in such a manner as to bring about recovery without sacrificing a large per cent. of the monetary value.

ANOTHER HORSEMAN WRITES A BOOK.—Thomas Floyd-Jones has followed the example of Fred Dietz and written a book about old New York, which promises to be of absorbing interest to horsemen, sportsmen and old boys in general. Mr. Floyd-Jones has lived a long lifetime in New York and vicinity, and has known and seen nearly all the great trotters and runners since the days of the Union Course. His ancestors on Long Island owned Mambrino, the son of Messenger and sire of Tredwell's Abdallah, and one of them backed Boston Blue in the match in which 3:00 was first beaten by a trotter in public for a purse, stake or wager, so far as is known. The book is now in press.

A CURTAIN RAISER.

O Horse, I sometimes wonder when I see
 Some roaring chariot urged by gasolene
 (Proud in its hundred horse-power) blur the scene
With speed that never came from pedigree—
Or when some areo-devil rigged to be
 A pest in Lucifer's long-lost demesne,
 I view aloft—ah, then with sorrow keen
I wonder, Horse, what will become of thee!.

Thus brooding, to thy Yearly Festival
 I ride (by taxi) and behold thee dear
As when thou borest Valkyrs to Valhal
 Or did still sprightlier jobs for Paul Revere.
Neigh, Horse! fear not the dodo's lonesome fate;
For what we love we never give "the gate"!

(Wallace Irwin, in "*The Smart Set.*")

THREE USEFUL KNOTS AND HOW TO USE THEM.

By Prof. H. E. Kingman, Chair of Surgery, Fort Collins, Colo.

In comparison with human surgery, the literature pertaining strictly to veterinary surgery is almost a minus quantity. It



Figure 1.



Figure 2.



Figure 3.



Figure 4.



Figure 5.



Figure 6.



Figure 7.



Figure 8.

is not meant to overlook the little we have that is of good quality, but the fault lies in the fact that there is not enough of it, and minute detail seems to be neglected. Certainly the tying of a knot is of fundamental importance, since it is a part of nearly every operation and should be one of the first steps in the instruction of operative surgery. An operator's reputation of course, depends largely upon the results he obtains; a surgeon should work with all possible speed and still do his work well; and both speed and efficiency depend largely upon technique, which is made up of a number of consecutive steps. An operation as a whole, then, may be improved by developing the individual parts.

The knot herein described is tied with one hand; it is a very convenient and simple method and when perfected by practice adds a finish to the operator's technique.

Another illustrated article, by Prof. Kingman, entitled "A Bow Line on a Bight," will appear in the August REVIEW.

PRIZES TO MEMBERS OF SENIOR CLASS, NEW YORK STATE COLLEGE AT CORNELL UNIVERSITY, ITHACA.—The following prizes were awarded the senior class at the above institution at the recent commencement exercises. *Horace K. White Prize:* First prize to Alfred Savage; second prize to Jos. Stanley Clark. *The Hollingworth Honorarium in Pathology:* To Alfred Savage. *The Jane Miller Prize in Physiology:* Divided between Harry Peter Bonnikson and Peter Theodore Peterson. *The Laura C. Schroeder Prize in Small Animal Clinic:* Awarded to Floyd Thomas James. *The Joseph Gordon Bennett Prize in Anaesthesia:* Awarded to Ralph Ray Moulthrop.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.—The mid-summer meeting of this association will be held on July 9th at Montclair, N. J. Dr. James McDonough, of that beautiful city of homes, will play the rôle of host. That fact alone insures an excellent meeting, to which President Smith extends an invitation to his many friends in the adjoining States; and when "Tom" Smith extends an invitation you are assured that it is a hearty one. We will venture an opinion on our own account that "Jimmy" McDonough will have every lame horse in Essex County lined up for inspection by his colleagues and friends.

SUMMER HINTS FOR LIVESTOCK.

By L. M. Steckel, D.V.M. (O.S.U.), New York, N. Y.

Now that the summer season is in full swing and the heat pressing heavily on man and beast, it behooves man, of higher intelligence, to take full consideration of his friends "the dumb animals." Remember well that as the horse works in the hot weather and perspires heavily, he needs considerable more water to drink and, therefore, you should not be stingy in this respect. Let him have freely of this commodity and you will not be afraid that he is overfilling himself too much at one time. Of course, it is a good rule not to let a horse drink too much cold water while he is overheated. You should also drive the horse slower in hot weather and when at work in the field give him a rest every now and then, if possible in a shady spot. Do not change the horse's feed suddenly; do that gradually, especially is this true of new hay or new oats. During the days of rest let the horse have exercise and give him a little grain, but not the full ration as when at work. The stable should be kept clean and cool; the windows and doors screened and remember to swat the fly. The harness should be kept clean, especially the collar and saddle. It is very advisable to take the harness off the horse when he has his noon-day meal.

Cows on Pasture.—It is well to remember that in the intense hot days of July and August cows, too, are likely to suffer from the heat. Be sure to provide some shade for them. In case you have no woods, then bring them under the shed during the afternoon. See that the cows have plenty of cold water to drink. Also let them wade in a clean brook whenever they seem inclined to do so. Who has not observed, on a hot summer's day, cows standing belly deep in water in a brook or river?

Another thing, cows are often pestered by flies. To mitigate

this condition spray them several times a week with any of the fly remedies, such as "Shoo-Fly," or crude petroleum mixture, for sale in drug stores. A small spray pump for this purpose can be purchased at a small expense. When you bring the cows into the barn at milking time, do not allow the flies to swarm there. Have the place clean, the windows and doors screened. A cow cannot do both, stand the flies and fill the milk bucket.

What little expense and extra care bestowed on the cows during this time will be amply repaid by results in the pail.

The small stock, too, should not be overlooked. They must not suffer from heat and flies either.

Dr. J. B. Archer Dead.—After our forms were closed, we received a communication from our esteemed friend, Dr. A. F. Nelson, Indianapolis, Ind., containing the details of the death of Dr. J. B. Archer, of Spencer, that state. An obituary notice will appear in our August issue.

Has Reviews From Volume Fifteen and Cherishes Them.—Dr. Lyman D. Brown, Sedalia, Missouri, in requesting two back numbers of the Review, says: "These two numbers will complete my files from Volume XV. to the present time. I have arranged to have them bound that I may better care for them."

Value Greater Than the Cost.—Dr. F. L. May, of Pennsylvania, in renewing his subscription to the Review, writes: "I don't know how you can get out so good a veterinary journal for the money. I can't possibly get along without it."

Has Taken It Twenty-six Years.—Dr. George V. Towne, Connecticut, says in renewing his subscription: "Here goes for an enclosure in the form of a P. O. Money Order for my subscription to the Review, making my 26th year."

PURE BRED STALLIONS.

By L. M. Steckel, D.V.M. (O.S.U.), New York, N. Y.

I wish to impress upon farmers the necessity of mating their mares to pure bred stallions. In every locality there are usually found one or more pure bred stallions of the draft type suitable for service for farm mares. The difference in cost between the scrub stallion and the pure bred sire may appear quite significant; the result, however, will more than compensate for it. So many of the abnormalities, such as badly curbed hocks, congenital ringbone or faulty conformation noticed in farm horses can be traced direct to the parent stock. The saying that horses are horses must be modified in this regard; namely, that while the animals we call horses may have the characteristics of the horse, still they may not be suitable for the needs of the horseman. There is a distinction between any kind of a horse and a good horse.

It makes no difference whether you breed a horse for farm work or for driving. You should have at least a good sire to start with. It costs just as much to feed the poor scrub horse; in fact, it is a crime to give away good feed to a poor horse. If you breed the right kind of horse and follow this with proper feeding you are bound to develop a good animal—good for yourself and good for somebody else. I wish, however, to impress upon you very strongly that the mere fact that the stallion is pure bred is not sufficient to justify your mating the mare to him. You must know the kind of stock he comes from and the kind of stock that come from him; that is, what kind of foals he produces; in other words, the pure bred stallion should have a record of merit.

REPORTS OF CASES.

A FIFTH SEASON'S REPORT UPON THE PERMANENT VALUE OF THE VENTRICLE STRIPPING OPERATION FOR "ROARING." *

By Frederick Hobday, F.R.C.V.S., F.R.S.E., Honorary Veterinary Surgeon to His Majesty the King, and formerly Professor in the Royal Veterinary College, London, Kensington, W.

In fulfilment of a promise made to the readers of *The Veterinary Journal* some years ago, I am presenting another year's report upon the value of the ventricle stripping operation, first brought into prominence as a practical measure by Dr. Williams(1), of Cornell University, for "roaring" in horses.

There is no question but that the operation can be said to have attained success in a very large number of cases, a further year's experience being that the proportion stated in *The Veterinary Journal* last year(2) (fully 75 per cent. of hunters and 90 to 95 per cent. of carriage horses) of useless horses made useful, is by no means exaggerated.

Similar favorable reports have now been published or received from various parts of the world, notably in America by Merrilat, Cary, Blatenberg and others; in Italy by Professor Antonini(3); in Germany by Professor Eberlein(4); in France by Professor Cadiot(5) and M. Victor Drouin(6); in Hungary and Austria by Mr. W. Reynolds, M.R.C.V.S.(6), and the operation may truly be said to have become a godsend in its value to both owner and patient in preference to the only other previously known method of relief, viz., the tracheotomy tube.

Even if the operation only gave relief for one season, and the tube had then to be inserted it would be worth doing, for every owner or stud groom who has had experience of the cleansing and general care required by a "tubed" hunter will without hesitation assert that if the evil day *can* be staved off for even only so short a period as one year it is worth while making the attempt; and one very strong point in favor of this operation is

* Reprinted from *Veterinary Journal* (London), April, 1914.

that even if it does not succeed the horse is just as good as he was before for the insertion of the tube.

There have been, in my experience, so far as I have been able to trace up to the present, less than 2 per cent. of relapses, and most of these did one or two season's hunting before it occurred. I write now from the results of 837 individual horses whose respective histories since the operations I have kept in touch with.

The first two horses operated upon in England, which were done by Dr. Williams in September, 1909, are still at work to the satisfaction of their respective owners.

The list given on pp. 168 to 171 is a continuation of the history for another year of 100 cases, the same which were reported upon in *The Veterinary Journal* for January, 1911.

During the past year, on numerous occasions at Tattersall's, Warner Sheppard and Wade (Leicester), and other places, horses which have been operated upon have been entered in the catalogues as " operated upon for wind," and described as " practically cured," thus showing that the vendors are not afraid to admit the fact, and the prices reached have been quite on a *par* with those of average hunters.

I know of no reason at present for altering any opinion expressed in the reports of previous years, and the following brief extracts from letters of owners whose horses are in the above list are still further confirmatory evidence of the permanent value of the results obtained:

Case 8.—February 24, 1914. " The bay horse ' Newsboy ' is dead. He broke his leg in the hunting field, going well to the last, although making a noise.

" The grey horse seems to be quite cured, gallops on and does not tire, and makes no perceptible noise; would probably pass a vet."

Case 18.—Owner wrote, February 26, 1914: " The chestnut horse is going much better this season than he did last season. He is in much better condition. He was out hunting to-day with the Enfield Chase Staghounds, and I took particular notice of him; and I must say he went remarkably well. He was well up to the front all the time, which was an hour and fifteen minutes. He has hunted twice this week, and he is hunting again on Saturday.

" The only thing I can see against the horse is that he has a little discharge from the nose, but not so bad as it was last winter. He is a *real good hunter.*"

Case 25.—At first the result was so excellent that, although the horse was a bad roarer prior to operation, both the owner and a well-known hunting veterinary surgeon considered the beast to be "sound in wind," and a certificate was given to that effect. Some months later, however, after galloping about one and a half miles a curious habit of gulping would come on, and if not allowed to slacken speed the animal was threatened with dyspnœa. This would pass off in a few minutes when pulled up, and only reappear after a hard gallop.

As only one side had been done, it was decided to reopen the larynx and strip the right ventricle. This was done on November 23, 1911, and a V-shaped portion of the soft palate excised, as this appeared abnormally relaxed and enlarged. The result was to temporarily benefit the horse, and the animal went back to hunting for some months.

The gulping, however, returned, and after the hunting season the horse was shot (July, 1913).

Case 29.—February 23, 1914: "The gelding 'Challenger' is still hunting and going very well. My son has him at Cambridge."

Case 55.—February 25, 1914: "The 'tubed' horse that you did in 1910 goes splendidly. He makes a slight noise, but it does not stop him at all."

Case 70.—February, 1914: "The owner is pleased to say that the mare operated on four years ago has got no worse since she was done. She still makes a noise when galloping, but it does not seem to distress her."

Case 79.—March 28, 1914. Owner wrote: "The chestnut horse operated on for his wind in May, 1910, makes very little noise except when he is very fresh, or pulls hard in very heavy land. It is a certainty that if the operation had not been performed on him I should never have gone on riding him, as I hate a noisy horse."

Case 81.—March 27, 1914. Owner wrote: "I am pleased to state that my horse you operated upon in May, 1910, is still going well.

"I am not certain that he would pass the vet., but he gallops strong and well and does not roar; he makes a little noise, but it is not perceptible casually, and does not stop him; before he roared at a trot."

Case 89.—February 23, 1914. "I am still of opinion that the operation for roaring is a very great success.

"The brown horse you first of all only did on one side, and the year after completed the other side, is really wonderful. Just when first starting off you can hear him slightly, but afterwards not at all."

Case 97.—March 28, 1914. Owner wrote: "I have much pleasure in informing you that my roan horse which you operated on (I think four years ago) has been going thoroughly strong and sound. He has again carried my huntsman all this season and has put in an exceptionally hard time, doing very often other horses's work, and has not been sick or sorry once. A *most* remarkable success."

Case 108.—March 27, 1914. Owner wrote: "The operation you performed on my bay hunter in 1910 has been most successful. I do not say there is no noise, for I think in that respect the horse is going back; but he is going as strong as ever this season, and his wind does not seem to distress him."

Case 115.—March 27, 1914: "The grey hunter operated on in June, 1910, is going wonderfully well, and 'hops the top twig' twice a week. He makes a little noise, but it does not stop him at all, and is nothing to what it was before operation."—M.R.C.V.S.

Case 116.—March 29, 1914. Owner wrote: "I am glad to be able to tell you that the chestnut hunter you operated on for roaring in June, 1910, is still going on satisfactorily."

Case 117.—February 25, 1914: "The horse of mine on which you operated some four years ago has been hunting all this year; was, in fact, out on Monday last. He makes a noise, and it stops him occasionally, but for Sussex he is as useful a horse as one wants, as the wind affection does not interfere with him in a hunt in that country, though I sometimes notice it on the Downs."

Cases 119 and 120.—On March 27 the veterinary surgeon wrote: "I have spoken to Colonel K——, and he says 'Puggy' is still going well, and that the operation is a great success.

"Lord L——'s horse was sold at Leicester last autumn, and I have lost sight of him, but he was quite all right then."

Case 129.—February 23, 1914: "The mare 'Cinderella' is still carrying me as well as ever, never 'sick or sorry,' and I may fairly repeat and confirm contents of my letter of March 24, 1913."

Cases 137 and 138.—On March 16 the veterinary surgeon wrote: "Colonel M——'s hunter has been sold, and was almost cured. The operation was a success. Captain C——'s horse has

No. case	Date of operation	Class of horse	Age	Description before operation	Result on first trial	Report in January, 1911	Report in April, 1912	Report in April, 1913	Present report (March, 1914)
	1909								
1	Sept. 10	Hunter.....	10	Bad whistler.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Excellent.
2	Sept. 10	Hunter.....	9 or 10	Bad whistler.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Excellent.
	1910								
5	Jan. 25	Hunter.....	7	Bad roarer.....	Much improved.....	Can gallop freely without distress	Satisfactory..	Satisfactory.....	Unable to trace.
8	Feb. 3	Hunter.....	10	Bad roarer.....	Much improved.....	Can gallop without distress, although makes noise	Satisfactory..	Excellent.....	Excellent till destroyed for broken leg.
10	Feb. 15	Hunter.....	6	Bad roarer.....	Much improved.....	Second operation, Aug. 30 Excellent.....	Excellent....	Sold and lost trace of..	
11	Feb. 15	Hunter.....	8	Bad whistler.....	Excellent.....	Practically cured, perhaps a little thick in wind	Excellent....	Excellent.....	Sold and lost trace of.
18	April 1	Hunter.....	7	Roarer.....	Not very satisfactory.	Satisfactory.....	See notes....	Hunting well, but still has nasal discharge	Much better than last year.
20	April 6	Hunter.....	..	Roarer.....	Good.....	Satisfactory.....	Satisfactory..	Satisfactory.....	Satisfactory.
22	April 6	Hunter.....	..	Roarer.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Developed heart trouble. Destroyed.
25	April 10	Hunter.....	6	Bad roarer.....	Excellent.....	Excellent.....	Satisfactory..	Satisfactory.....	Dead. See note.
29	April 10	Hunter.....	8	Roarer.....	Not good.....	Second operation, Sept. 29. Now satisfactory	Satisfactory..	Satisfactory.....	Satisfactory.
31	April 15	Racer.....	3	Bad roarer.....	Slight whistler, but no distress	Slight whistler, but no distress	Satisfactory..	Sold; unable to trace...	—
40	April 15	Hunter.....	5	Bad whistler.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Destroyed for lameness.
41	April 19	Hunter.....	8	Confirmed roarer.	Excellent.....	Excellent.....	Excellent Since sold for £100	Makes a noise again, but can hunt without distress	Unable to trace.
44	April 23	Hunter.....	9	Bad roarer.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Excellent.
45	April 24	Hunter.....	5	Bad whistler.....	Excellent.....	Excellent.....	Satisfactory..	Satisfactory.....	Satisfactory until shot after an accident.
51	April 24	Hunter.....	7	Bad whistler.....	Excellent.....	Excellent.....	Excellent....	Sold and lost sight of	—
53	April 27	Hunter.....	7	Bad whistler.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Sold and lost sight of.
55	April 27	Hunter.....	9	Bad roarer.....	Satisfactory.....	Satisfactory.....	Excellent....	Excellent.....	Excellent.
57	April 27	Hunter.....	7	Bad whistler.....	Excellent.....	Excellent.....	Satisfactory..	Relapsed and was shot.	—
58	April 30	Hunter.....	7	Bad roarer.....	Improved.....	Satisfactory.....	Satisfactory..	Sold and lost sight of...	Unable to trace further.
64	May 4	Hunter.....	..	Moderate whistler	Excellent.....	Excellent.....	Excellent....	Sold for £200 and lost sight of	Unable to trace further.

68	May 7	Van gelding....	7	Bad roarer.....	Excellent.....	Satisfactory.....	Satisfactory..	Still satisfactory.....	Satisfactory.
70	May 8	Hunter.....	6	Bad roarer.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Excellent.
71	May 8	Hunter.....	6	Bad roarer.....	Temporarily better...	Second operation, Sept. 9. Excellent	Excellent....	Excellent.....	Excellent.
73	May 10	Hunter.....	16	Bad roarer.....	Excellent.....		Excellent....	Excellent.....	Excellent.
79	May 22	Hunter.....	12	Bad roarer.....	Not very satisfactory.	Still some noise, but hunting without distress	Satisfactory..	Satisfactory. See notes	Satisfactory.
81	May 23	Hunter.....	..	Bad roarer.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Excellent.
85	May 28	Harness horse..	9	Bad roarer.....	Improved.....	Second operation, August 3. Now excellent	Satisfactory..	Satisfactory.....	Satisfactory
87	May 30	Hunter.....	6	Bad roarer.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Sold and lost sight of.
89	June 1	Hunter.....	9	Roarer.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Excellent.
92	June 5	Hunter.....	9 or 10	Bad whistler.....	Not very satisfactory.	Now satisfactory...	Satisfactory..	Slight relapse, but still hunting	Has been shot.
93	June 5	Hunter.....	7	Roarer.....	Satisfactory.....	Satisfactory.....	Satisfactory..	Slight relapse.....	Sold and lost sight of.
96	June 9	Hunter.....	15	Bad roarer.....	Satisfactory.....	Satisfactory.....	Excellent....	Excellent.....	Excellent.
97	June 10	Hunter.....	9	Bad roarer.....	Not satisfactory.....	Excellent.....	Excellent....	Excellent.....	Excellent.
98	June 11	Hunter.....	8	Bad roarer.....	Satisfactory.....	Satisfactory.....	Satisfactory..	Sold and lost sight of...	Unable to trace further.
100	June 12	Russian Orloff trotter	4	Bad roarer.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Excellent.
101	June 12	Russian trotter.	4	Bad roarer.....	Excellent.....	Excellent.....	Excellent....	Has developed very severe stringhalt	Unable to trace further.
105	June 15	Hunter.....	6	Bad roarer.....	No improvement.....	Second operation, Improving	Excellent....	Relapsed.....	Sold and lost sight of.
106	June 15	Hunter.....	12	Bad roarer.....	Improved, but still makes noise	Second operation, Sept. 10. Now satisfactory.	Excellent....	Satisfactory See notes	Destroyed for injury.
107	June 16	Hunter.....	7	Bad roarer.....	Satisfactory.....	Satisfactory.....	Satisfactory..	Satisfactory.....	Developed ringbone and sold.
108	June 16 1910	Hunter.....	7	Roarer.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Excellent.
111	June 18	Hunter.....	10	Bad roarer.....	Not good (2d operation Oct. 20)	Now satisfactory...	Excellent....	Excellent.....	Satisfactory.
113	June 23	Shire.....	3	Roarer.....	Improved.....		Excellent....	Has relapsed.....	Unable to trace further.
115	June 26	Hunter.....	6	Roarer.....	Much improved.....	Satisfactory.....	Satisfactory..	Satisfactory.....	Satisfactory.
116	June 27	Hunter.....	8	Whistler.....	Excellent.....	Excellent.....	Satisfactory..	Satisfactory.....	Satisfactory.
117	June 27	Hunter.....	..	Roarer.....	Satisfactory.....	Satisfactory.....	Satisfactory..	Satisfactory.....	Satisfactory.
118	June 27	Hunter.....	..	Bad roarer.....	Satisfactory.....	Satisfactory.....	Satisfactory..	Died. See notes.....	—
119	June 29	Hunter.....	12	Roarer.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Excellent.
120	June 29	Hunter.....	8	Bad roarer.....	Excellent.....	Excellent.....	Excellent....	Excellent.....	Sold and lost sight of.
121	July 1	Polo Pony.....	7	Bad roarer.....	Improved.....	Satisfactory.....	Excellent....	Excellent.....	Excellent.
122	July 1	Hunter.....	5	Whistler.....	Improved.....	Excellent.....	Excellent....	Excellent.....	Excellent.
126	July 5	Hunter.....	8	Bad roarer.....	Satisfactory.....	Satisfactory.....	Satisfactory..	Satisfactory.....	Sold and lost sight of.

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127	July 3	Hunter	9	Bad roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Sold and lost sight of.
130	July 8	Hunter	3	Roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Sold and lost sight of. Unable to trace.
131	July 8	Hunter	6	Bad whistler	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory.
134	July 11	Carriage	7	Bad roarer	Satisfactory	Satisfactory	Satisfactory	Sayisfactort when sold; since lost sight of	—
136	July 14	Hunter	6	Very bad roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory. See notes	Shot for varicular disease.
137	July 15	Hunter	8	Bad whistler	Excellent	Excellent	Excellent	Excellent	Excellent.
138	July 15	Hunter	7	Bad roarer	Excellent	Excellent	Excellent	Sayisfactort	Satisfactory
140	July 21	Hunter	6	Roarer	Excellent	Excellent	Satisfactory	Has been sold and lost sight of	—
141	July 24	Hackney	5	Bad roarer	Excellent	Excellent	Satisfactory	Satisfactory	Satisfactory.
145	July 28	Hunter	4	Bad whistler	Excellent	Excellent	Excellent. Sold since for £120	Excellent. See notes	Excellent.
149	July 28	Racer	5	Bad roarer	Excellent	Excellent	Excellent	Sold and lost sight of	—
151	Aug. 2	Hunter	8	Bad whistler	Excellent	Excellent	Excellent	Excellent. See notes	Excellent.
152	Aug. 2	Hunter	9	Bad roarer	Excellent	Excellent	Excellent	Excellent	Excellent.
153	Aug. 3	Hunter	10	Bad roarer	Excellent	Excellent	Excellent	Excellent	Excellent.
160	Aug. 5	Hunter	6	Slight whistler	Excellent	Excellent	Excellent	Was sold and lost sight of	—
161	Aug. 6	Hunter	9	Roarer	Not good	Improving	Satisfactory	Satisfactory	Satisfactory.
162	Aug. 6	Hunter	7	Bad roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory.
163	Aug. 6	Hunter	6	Bad roarer	Excellent	Excellent	Excellent	Satisfactory	Excellent. See notes.
167	Aug. 9	Carriage	9	Bad roarer	Excellent	Excellent	Satisfactory	Satisfactory	Satisfactory.
170	Aug. 12	Hunter	5	Bad roarer	Excellent	Excellent	Excellent. Sold for £150	Excellent	Lost trace of Now in Belgium
171	Aug. 12	Hunter	5	Bad whistler	Excellent	Excellent	Satisfactory	Sold and lost sight of	Unable to trace further.
172	Aug. 12	Hunter	5	Bad whistler	Excellent	Excellent	Satisfactory	Sold and lost sight of	Unable to trace further.
173	Aug. 12	Hunter	5	Bad whistler	Excellent	Excellent	Satisfactory	Sold and lost sight of	Unable to trace further.
174	Aug. 19	Harness	10	Roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Excellent.
176	Aug. 20	Hunter	6	Roarer	Excellent	Excellent	Satisfactory	Satisfactory	Satisfactory.
178	Aug. 20	Hunter	Aged	Whistler	Satisfactory	Satisfactory	Satisfactory	Sold and lost sight of	—
181	Aug. 21	Hunter	5	Roarer	Excellent	Excellent	Excellent	Satisfactory	Sold and lost sight of.

182	Aug. 22	Hunter	6	Roarer	Excellent	Excellent	Excellent	Excellent	Excellent.
183	Aug. 22	Shire	3	Bad roarer	Excellent	Excellent	Excellent	Excellent	Excellent.
185	Aug. 26	Hunter	9	Bad roarer	Satisfactory	Satisfactory	Excellent	Satisfactory. See notes.	Satisfactory.
186	Aug. 26	Hunter	4	Bad roarer	Satisfactory	Satisfactory	Satisfactory	Sold and lost sight of	—
190	Sept. 8	Hunter	4½	Whistler	Satisfactory	Excellent	Excellent	Satisfactory	Satisfactory.
191	Sept. 13	Hunter	5	Bad roarer	Satisfactory	Satisfactory	Satisfactory	Excellent. See notes	Excellent.
192	Sept. 14	Trooper	11	Bad roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory.
193	Sept. 14	Trooper	7	Bad roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Sold and lost sight of.
194	Sept. 14	Trooper	6	Bad roarer	Excellent	Excellent	Satisfactory	Satisfactory	Satisfactory.
195	Sept. 17	Carriage	5	Bad roarer	Excellent	Excellent	Satisfactory	Satisfactory	Satisfactory.
196	Sept. 17	Hunter	12	Roarer	Satisfactory	Satisfactory	Satisfactory	Relapsed and been tubed	Hunting with tube
197	Sept. 17	Hunter	8	Roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory. See notes	Satisfactory.
198	Sept. 18	Hunter	5	Bad roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Sold. Unable to trace.
199	Sept. 20	Hunter	12	Bad roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory.
203	Oct. 1	Hunter	8	Bad roarer	Bad	Excellent	Excellent	See notes	Sold and lost sight of.
204	Oct. 4	Hunter	9	Roarer	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory until destroyed.
205	Oct. 4	Pony	Aged	Bad roarer	Excellent	Excellent	Excellent	Now dead	—
206	Oct. 7	Hunter	7	Bad whistler	Excellent	Excellent	Excellent	Excellent	Excellent.
208	Oct. 7	Hunter	5	Whistler	Excellent	Excellent	Excellent	Excellent	Satisfactory.
216	Oct. 7	Harness	8	Whistler	Excellent	Excellent	Excellent	Satisfactory	Excellent.

been hunting and doing military work ever since, and is practically all right."

Case 141.—March 27, 1914: "The chestnut hackney gelding which you operated upon for roaring in July, 1910, was still going on satisfactorily up to last May, when it was sold by auction with the other horses."—M.R.C.V.S.

Case 151.—February 22, 1914: "'John Peel' is a great success, and makes no noise at all after three hard seasons."

Case 155.—March 14, 1914: "'Scarlet Runner' is going 'tip-top' this season."

Cases 161, 162, 163.—On March 14 the veterinary surgeon with whom these cases were operated upon in consultation wrote: "Colonel L——'s horse is still carrying him 'the best,' and Miss A——'s horse, too, went splendidly this season, whilst Mr. R——'s horse won a Point-to-Point last week for its new owner."

Case 174.—March 27, 1914. The veterinary surgeon wrote: "Miss H——'s bay horse carried her to hounds well, and also did his harness work in the summer without any distress, although he always made a slight noise. As this horse went a roarer after a very acute attack of pneumonia, he was a distinct success, as previous to the operation he was worthless. Unfortunately he split a pastern and was destroyed."

Case 191.—March 7, 1914: "The grey hunter is going excellently; makes a blowing noise only. Worth £80 at least."

Case 197.—In a letter dated March 15, 1914, the owner wrote: "I have no change to report in my horse, 'Captain Kettle'; he fully maintains the great improvement made in him by your operation.

"I have hunted all the season with the Mid-Kent Staghounds—a very big and heavy country—we have had some very fast runs, and he has not been distressed. Of course, he still makes a slight noise when galloping fast in heavy going, and I occasionally have to slow him down for a minute or two, but apart from this his wind seems quite good. This result is very satisfactory to me, as he is the best horse I have ever ridden, and I value him much. He was turned out to grass all last summer."

Case 204.—March 15, 1914: "This horse was a great success and could gallop to the end of any hunt without any sign of distress. The animal is now dead, having got paralysis of hind quarters, for which it was destroyed."

Case 206.—March 16, 1914: "I sold the horse last year that you operated upon for me. The result of the operation appeared to be permanent. The horse was very much hindered by his wind before the operation, but afterwards it was able to hunt without inconvenience. He was hunting all last season and this."

Case 216.—March, 1914: "The roan mare is very satisfactory, and going better than ever she did. The result of the operation is still quite successful."

REFERENCES.

1. Proceedings of the American Veterinary Medical Association, 1906, 1907, 1911.
2. *The Veterinary Journal*, April, 1913, "The Fourth Season's Report upon the Permanent Value of the Ventricle Stripping Operation for 'Roaring.'"
3. "Il Cornegio e la nuova Operazione" (Congresso Nazionale Veterinario, Turino, 14-16 Settembre, 1911).
4. *The Veterinary Journal*, September, 1912 (a translation).
5. *Receuil de Médecine Vétérinaire.*
6. Communicated.

DEATH OF A FOAL—TOXICITY OF MORPHIA?

By R. C. Jolliffe, F.R.C.V.S. (England), Pickering, Ontario, Canada.

Subject: A male Clydesdale foal, born normally and without assistance, during the night of May 29th, a few days prior to full time. The following morning (May 30th) the foal appeared weak and could not rise or remain standing without help and persistently refused to suck till about 10.30 that night, when, having gained considerably in strength during the day, it commenced for the first time to take nourishment naturally. During the day frequent attempts had been made to induce the foal to suck, but finding them unsuccessful, the mare was milked into a cup and the milk administered to the foal—evidently much against its will—both by spoon and by rubber teat on the end of a bottle. During this period loose respiratory râles in the neighborhood of the larynx and trachea became audible.

The following morning the foal had improved to a remarkable degree; it was sucking frequently and freely and, except for occasional tracheal râles, appeared as healthy, bright and lively as could possibly be wished for, till about 2 p. m., when indications of abdominal pain were noticed. The abdomen was drawn up, the abdominal muscles tense, and the patient evidently uneasy and distressed. The bowels and urine had been in every way normal up to now.

These unfavorable symptoms became rapidly worse and by 4 p. m. it was quite apparent that the foal was suffering acute abdominal pain. The rectum as far as could be explored was empty. About 2 oz. of castor oil with 30 minims Collis Brown's chlorodyne were administered, a few ounces of cow's milk, raw eggs and whisky having been previously given by the attendant. Hot fomentations were applied to the abdomen, and about 8 oz. of soapy water rectally injected. In half an hour's time the evidence of abdominal pain had become still more intensified and the patient appeared to be suffering extreme agony. There was some difficulty in drenching him or persuading him to swallow, and I therefore decided (wisely or unwisely?) to administer half a grain morphinæ sulph. hypodermically.

A little later the pain appeared to be considerably relieved, the patient went quietly to sleep, and died, seemingly in his sleep, about 8 p. m.

Autopsy the following morning revealed nothing abnormal on opening the peritoneal cavity. On slitting up the alimentary track several feet of the small intestine showed marked venous congestion of the mucous membrane. Cæcum, stomach and large intestine normal. One small mass (about the size of a filbert) of dense, impacted fecal matter was present in the small colon. Remainder of abdominal contents normal. Heart and lungs healthy. A large quantity of whitish froth was present in the trachea, extending from the larynx down to many of the larger bronchi, but not extending to the bronchioles or lung tissue. No other abnormality could be discovered in any other organ or tissue of the body. There was red clot in both sides of the heart.

Queries and Observations—1. To what extent was this foal "killed by kindness," coupled with morphia?

2. Should a weakly foal that refuses to suck be forcibly fed during the first 24 hours? If not, at what age should or may forcible feeding be resorted to if still refusing to suck?

3. Is refusal to suck, when newly born, at all a common condition in foals or calves? (I am credibly informed that the human infant is frequently given no nourishment of any kind during the first 3 days of life.)

4. Is the drenching, or forcible administration of milk, a particularly risky or undesirable procedure in the newly born foal, on account of the danger of fluid entering the trachea? In this case there seems no doubt that the froth in the trachea

simply represented milk that had "gone the wrong way," and the appearance of the trachea distinctly suggested that if the foal had survived longer, mechanical pneumonia might have supervened, unless the froth therein became in some other way disposed of. (There was no indication, post mortem, of pulmonary œdema or congestion.)

5. The mare had been in full lactation for a week or more prior to foaling, the milk flowing freely from the udder. The first (colestrum-containing) secretion was thus no doubt wasted through leakage. Might this account for the intestinal congestion, or was the latter more likely to have been set up by the small impacted mass in the floating colon? (There appeared to be no damming back of the bowel contents anterior to this mass.)

6. Are there any grounds for the opinion, apparently popular amongst the "laiety," that a mixture of cow's milk and raw eggs is of value as a laxative for foals?

7. Finally, to what extent was the half-grain of morphia accountable for death? I have a strong suspicion, on reviewing the case, that it probably had a considerable share. Appearances certainly pointed to it, and had not the foal (fortunately?) been my own property, I think I should have lost my client as well as the patient. I know that morphia is regarded with the greatest awe by medical men for the young of the human species, but have never heard that the same applies to the equine infant. I am of opinion that it is practically impossible to kill an adult horse with morphia.

Any comments on the above case by practitioners experienced with foals would be much appreciated by the author.

VENTRAL HERNIA.

By F. F. Brown and J. V. Lacroix, Kansas City Veterinary College.

The accompanying cut is that of a yearling mule sent by Dr. A. A. Shetler, '09, of Wellington, Kan., to the Kansas City Veterinary College for the Missouri Valley Veterinary Association clinic and was examined by several veterinarians and pronounced practically inoperable and was not handled during this meeting.

On January 30 it was thought that this case would be of interest and it was presented at our regular clinic. The subject had been dieted and was placed in a dorsal recumbent position upon the operating table and an attempt was made under com-

plete anesthesia to reduce the hernia, that the margins of the opening in the abdominal parieties might be outlined by palpation, and a definite idea of the position and extent of the hernia be obtained. Reduction by means of external manipulations and taxis was impossible, and it was thought that there existed adhesions



which prevented reduction in this manner. An exploratory laparotomy was done and an incision about ten inches in length was made through the wall of the enterocele, and the parts explored by palpation. It was learned that there existed no adhesions and that reduction of the hernia was impossible because the bulk of the mass rendered it physically impossible to replace the viscera in any manner. The wound was closed by means of continuous sutures, and the subject returned to the stall. It was intended to thoroughly gaunt the animal and possibly try to reduce the hernia at a later date. No particular inconvenience was manifested by the subject during the first few days following the operation, but on February 6th there was evidence of peritonitis, and on February 9th the subject was lost.

An autopsy revealed the fact that there existed in this case

an almost circular opening situated on the left side of the median line of the abdominal floor, beginning immediately in front of the pelvic brim. The margins of the opening were very dense and very much thickened, and it was clearly evident that it would have been practically impossible to permanently reduce this particular hernia.

EPITHELIOMA.

By the Same.



The accompanying cut represents a mare that was purchased at the sales pavilion at Kansas City and was treated at our clinic. Microscopically it presented the appearance of an

epithelioma. It involved practically all of the clitoris and constituted quite a blemish. Extirpation, with amputation of the clitoris, was effected, the parts sutured, and at the end of a week's time the case was apparently progressing very favorably, as the mare was sold without the purchaser noticing the existence of any local disturbance.

SERUM THERAPY.

By S. A. Peck, D.V.S., Oak Grove, Mo.

A seven-year-old bay gelding weighing about 1,200 pounds and used as a driver, was kicked with sharp shoes over the scapulo-humeral articulation, and synovia was discharging from an open wound when the injury was discovered. The wound was cleaned and dressed as often as necessary and bacterin injected every three to five days. The animal returned to work in about three weeks.

A sixteen-month-old draft filly was kicked on the humero-radiouluar joint, causing an extensive suppurating process. Bacterins were injected for about two weeks, at the end of which time the filly was using the limb nicely. The animal attempted to play with some other colts about this time and the next day could not use his limb, being able only to drag it. The bacterin treatment was resumed for about three weeks, but the animal continued to grow worse. Several incisions from the point of injury down to the knee were made and pus was discharged from the openings. As the animal continued to lay around most of the time further treatment was discontinued. Soon afterward the animal began to lick the pus from the wound and it was not long till an improvement could be seen, the animal finally making a complete recovery. This animal was observed two or three times daily and the recovery is credited to auto-medication.

The three foregoing case reports are credited to *The Alumnus* (Kansas City Veterinary College), April, 1914.

Ophthalmic Mallein Test the Necessary Passport for Horses to Enter the State of Rhode Island.—State Veterinarian J. S. Pollard, of Rhode Island, issued the following edict, under date of April 2, 1914: "On and after April 10, 1914, horses, asses and mules from all other states must first have passed an ophthalmic mallein test before entering Rhode Island."

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Compound Comminuted Fracture of the 7th and 9th Ribs [*W. Cargill Patrick, F.R.C.V.S.*].—A well known race horse, while on the track and running, suddenly stopped his gait and had to be taken home, being in pain, sore and stiff all over. When in his box he appears as having bowel trouble, and received a laxative dose of oil. The fourth day after, the writer saw him, and by the marked evidence of chest trouble, a great swelling over the ribs and a certain amount of cutaneous emphysema, compound fracture with pleurisy was suspected. Poultice jacket with firm bandaging was applied, febrifuges administered. Twenty-four hours after, foetid breath was well marked. The case being hopeless the horse was destroyed. At post mortem there was found fractures of the 7th and 9th ribs, at both their upper and lower thirds respectively, with a large splinter from the anterior edge of the seventh rib embedded in the lung. Pleuritic lesions existed at the upper fractures. The fractures were the result of the "bucking" of the animal at the time of starting in the race.—(*Vet. News.*)

Clinical Cases [*J. H. Parker, M.R.C.V.S.*]—*Horn On Cow's Neck.* A cow had on the neck a small tubercle, about the middle third. It was removed and proved to be a perfect little horn, an inch and a half long and of the same shape as the cow's horn. Instead of a horn core, it was a soft matrix that looked like yellow, firm cartilage.

Vomition in the Horse. A horse is found vomiting all over his box. On examining him there was found on the lower left side of the jugular vein (not the oesophagus) a thickening an inch long which felt like a stricture of the vein. Pressure upon it would bring on tremendous retching. An hypodermic injection of morphia was made. The next morning the horse was well.

Had the thickening been the oesophagus, the vomiting could be explained, but being in the jugular vein it was puzzling.—(*Vet. Rec.*)

Pleuro-pneumonia of Goats in India [*Major G. K. Walker, F.R.C.V.S.*].—A very fatal form of pleuro-pneumonia in goats was brought to the attention of the writer, who having had no opportunity to investigate personally came to a diagnosis by the various reports of veterinary assistants and from morbid specimens which he had examined. Investigations and experiments were also made at the Punjab Veterinary College laboratory while the temperature of all experimented animals was regularly taken and all the clinical symptoms recorded. From all those the following conclusions were arrived at: "The pleuro-pneumonia of goats met with in Kangra appears to be identical with the enzootic pleuro-pneumonia of goats described by Nocard and Leclainche as occurring in Algeria, the Pyrenees and the Thuringian Mountains. The symptoms and lesions are similar and the failure to transmit the disease from animal to animal is coincident. The value of the above experiments (which are minutely described) is depreciated, no doubt, from the fact that plains animals had to be used." If possible, further investigations with hill goats will be made, with the object of proving the possibility of transmission by means of intrapulmonary inoculation.—(*Journ. Comp. Pathol. & Therap.*)

Arsenical Treatment of Surra in Horses [*By the same*].—This is the record of four cases which show the peculiar and rather unsuccessful results obtained by Holme's treatment, whose instructions were closely observed. The control case from which the animals were inoculated was an aged country-bred pony that had been inoculated from a control surra-dog. The disease ran a typical course and the pony died thirty-four days after organisms first appeared in the blood. He was a weak and aged animal which died sooner than was expected.

The results brought out the following conclusions: "In view of Holme's success with this treatment where 70 per cent. of cases were cured, the records of the four cases are most disappointing." (The treatment failed with all). One having died with arsenic poisoning, and in the other three where full subtoxic doses had been given the trypanosomes were not destroyed and reappeared in each case after two courses of treatment.

Holme's work has been on the whole very successful and is full of promise. He has also recorded some failures. Further investigations are necessary for the discovery of means more reliable in the treatment of that disease.—(*Ibid.*)

A Case of John's Disease Successfully Treated [*Sir John McFadyean*].—The record of this Devon cow is illustrated with two photos. One taken a few days after the treatment was begun in August, 1913, and the other on the 27th of January. In the former the animal is shown in its bad condition. She was very weak, without appetite, cold extremities and more or less diarrhoea. The treatment which consisted in the administration daily of one ounce of a solution of ferrous sulphate, 5 ounces with dilute sulphuric acid and water one pint. At first there was rather want of condition and the treatment had to be stopped. Taken up again after a few days, gradual improvement became manifest and after about two months the condition was steadily gaining. The cow had gained some 112 pounds. The feeding of the animal had been hay *ad libt.*, and daily a few pounds of oats and bran. To all appearance then the cow has recovered, but until post mortem is made the question remains: Has the recovery been absolutely complete. As bearing on this point, concludes the author, it may be mentioned that when the cow was tested subcutaneously with "*Johnin,*" a material analogous to tuberculin, but prepared from the bacilli of John's disease, the maximum rise of temperature during the following eighteen hours was 1.6° F., but there was a marked reaction to a simultaneous ophtalmic test with tuberculin.

This is but a case—others similarly treated will be the object of further communication.—(*Journ. of Comp. Path. & Ther.*)

A Complicated Case [*E. R. Routledge, F.R.C.V.S.*].—It certainly was a complicated case, which lasted from September, 1912 to after September, 1913.

Relieved first of an abdominal testicle weighing 2 ounces, and of a scrotal of 9 ounces, the colt was successively taken with hemorrhage of one and afterwards of the other operated testicular region—complicated with troubles of the penis swollen and pendulous. He then had laminitis, got over that, when gastric disturbances manifested themselves. The penis remaining in its paralyzed and swollen condition was amputated, hemorrhage

occurring from the stump and requiring ligature of the stump. Being turned out to recuperate, the colt takes colics and finally the urethral opening having partly closed another operation was required, which seemed to end the series of troubles. The animal urinating freely.—(*Vet. Journ.*)

Notes on Cases of Spavins Relieved by Cunean Tenotomy [*Capt. Percy Argile, F.R.C.V.S., A.V.C.*].—These are the records of first a bay mare which had a spavin of the near hind leg, for which she had been treated by five pyro-punctures with the ether cautery. After a temporary relief the lameness had returned and the bony enlargement considerably increased. It is then that the operation was performed and followed by excellent results, the mare returning to work after a few weeks.

The second case is that of a gelding, also lame on the near hind leg by a diffuse exostosis, which had also been fired. The same operation of cunean tenotomy was performed with a similar result, returned to steady work after a short time.—(*Ibid.*)

Complete Removal of the Pregnant Uterus and Ovaries in a Bitch [*J. Legg, B.V.Sc., and H. R. Seddon, B.V.Sc.*].—When ten months old a Yorkshire terrier bitch had a difficult labor and gave birth to one dead pup. Having got in pups again, she had a dead one at the proper time, but was thereafter taken with uneasiness, whining without delivering more little ones. Examination revealed a pup which could not be extracted. An operation is imposed, and as the bitch is very weak and would not stand the Caesarian, hysterectomy was performed. At one time artificial respiration had to be resorted to. The ovaries and uterus were removed. The wound closed, healed rapidly and recovery complete after fourteen days. The pup in the uterus was dead and could not have been expelled by the normal passage.—(*Ibid.*)

FRENCH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Foreign Body in the Pharynx [*Prof. Charmoy*].—Such accidents are frequent and this one presents an unusual interest by the situation occupied by the foreign body, the difficulty of diagnosis and the complications that followed it.

After giving the history of the case: Small dog, gluttonous eater, having enjoyed meat and bones thrown to it while its owner is taking his meal, suddenly showed signs of choking, coughing, vomiting, etc. After three days he was brought to the writer, who made an examination by external palpations of the pharnyx, by buccal inspection during which he was bitten slightly, but with all that, failed to detect the presence of the foreign body. Catheterism of the oesophagus was made quite easily. The diagnosis remained uncertain. The dog died the next day. At the post mortem was found, at the entrance of the larynx, immediately behind the epiglottis, between it and the arytenoids, a piece of bone, implanted across in the lateral walls of the pharynx, where congestion and swellings were evident. The trachea and bronchia were filled with spumous muco-purulent fluid and the lungs hepatized and numerous centers of gangrene and abscesses forming.—(*Rec. de Med. Vet.*)

Amputation of the Uterus in Cows [*Mr. A. Fafin*].—The writer has had two occasions, in cows suffering with unreducible prolapsus uteri, to perform with them this operation, resorting to the elastic ligature method.

The first case proved unsuccessful. The cow dying in forty-eight hours, notwithstanding injections of antiseptic solutions and careful hygienic attentions.

The second case treated in the same manner made an excellent and rapid recovery. In both cases the condition of the uterus had been very bad, ulcerated, swollen or even gangrenous in some spots. In the first case, a successful reduction with ligature of the vulva had been followed by a return of the prolapsus.

The author recommends the operation, specially when other methods of treatment appear to be likely to be followed by failures, and as long as even cases, apparently hopeless, do recover by the operation.—(*Ibid.*)

Prolapsus of the Uterus in Sow [*O. Lebrun*].—A sow, aged 10 months and weighing 60 kilogramms, was found one morning lying down with a dead foetus alongside of her and her uterus prolapsed. On exploring the abdomen the presence of other foetuses is detected. The prolapsed horn is free from injury. The animal is secured with the legs tied above the hocks. With boiled water the horn, carefully raised with a wide cloth on which it lays, is washed of all soiling matters and by slow

and moderate pressure and manipulations is gradually returned to its position. Water is thrown in the cavity of the horn, the hind quarters of the sow are raised up and after a few minutes she is left free and let walk to her pen. No bandage, no suture is applied. During the day she had some slight colics, and then delivered two more dead foetuses. She cleaned well and was all right after a few days.

Conclusions of the Author.—In multiparous females, prolapsus of one horn may occur, while the other contains other foetuses which will be delivered when the prolapsus is reduced without danger of its return unless the bottom of the horn is not thoroughly freed from all cause of irritation. Again, unless one is sure that all the contents of the uterus are expelled, it is better not to have recourse to suture of the vulva or to any bandage of contention. Finally, notwithstanding all the difficulties that the veterinarian may find before him he must always attempt to relieve an animal in such condition, which as in the present case might end satisfactorily with another more daring.—(*Rec. de Med. Vet.*)

A Case of Bovine Tuberculosis in Man [*Doct. Beitzke*].—A fourteen-year-old boy treated for severe anhemia died. At the post mortem extensive lesions of the most severe tuberculosis were found. Lymph glands enormously enlarged and caseous. The peritoneum was diseased, intestinal ulcerations were exposed, lungs with tubercles and spleen also infected. Two guinea pigs and a rabbit inoculated died with generalized tuberculosis. All the attempts made for cultures remained negative. Bovine tuberculosis was suspected and the family history revealed that all, the father and mother, sisters and brothers, were healthy, but the deceased boy used to drink every day one or two glasses of milk freshly taken from the cow. A rabbit was then used as experiments with bacilli obtained from the organ of the guinea pig treated by antiformine. About a dozen of bacilli of Koch were injected in each eye of two rabbits. Three became tuberculous and both rabbits died with severe generalized tuberculosis. From the researches of Schiek this experiment shows that the bacilli were bovine origin.—(*Presse Medicale.*)

Faradisation in Veterinary Therapeutic [*Major Ducher, Army Veterin*].—Under the title of *Muscular Atrophies of Traumatic or Surgical Origin*, with the treatment by Faradisa-

tion, the author calls the attention to the advantages and the good results that one may obtain with this mode of treatment, which unfortunately is rather neglected in veterinary practice. He relates three cases where with the use of small apparatus at interrupted current of Gaiffe he has obtained very important and beneficial results.

A first case was that of a pup fox terrier, eight months old, which by an accident had fractures of the hind legs, the right in one and the left in two places. Treated for these and comparatively recovered of his fractures with callous and some deformity, he also had a severe atrophy of the thigh and leg that ordinary treatment failed to improve. Faradisation was resorted to and with it, after the 10th application, improvement begins to appear. After thirty applications the muscles had resumed their size and the callous of the fracture reduced in a noticeable manner. There remained no lameness.

Another case, a large dog had a simple fracture of the right cubitus. After recovering of this the dog had another of the right humerus. He also was cured of this, but a marked atrophy of the muscles of the fore arms and of the brachial region had to be treated. Faradisation was resorted to. After 10 sittings the atrophy began to improve and the callous of the fracture diminished in size.

A third case is in a seven-year-old gelding which was disabled, probably the cause of it was muscular ruptures. After three months of various treatment the muscular atrophy which existed and gave rise to a severe lameness was very great, involving the four extensors of the anterior radial region. Faradisation was applied. After four sittings of an hour the animal showed a well-marked improvement in his gait. The treatment was continued until 30 applications had been made. The recovery was completed and all signs of lameness and weakness had disappeared.—(*Rev. Gen. de Med. Vet.*)

Marriage of Secretary Mayo's Daughter.—Miss Marguerite Kedzie Mayo, daughter of Dr. and Mrs. Nelson S. Mayo, will be married July 2, 1914, to Mr. Ashe Lockhart, at Christ's Church, Blacksburg, Virginia.

Dr. Miller Becomes Benedict.—Dr. Daniel Sutter Miller, Philadelphia, Pa., was married on June 15, 1914, to Miss Minnie Edith Yetter, East Stroudsburg, Pa. We wish the couple all the happiness of wedlock.

CORRESPONDENCE.

SOME OBSERVATIONS ON THE IMPORTATION OF PURE-BRED BEEF AND DAIRY CATTLE.

Sao Paulo, Brazil, May 1, 1914.

Editor American Veterinary Review, *New York:*

The importation of pure-bred beef and dairy cattle from North America to the South American countries, Brazil and the Argentine Republic, is a question of vital importance to the North American breeders having high-class animals of choice breeding and who care to enter these markets.

There is now a brisk demand for high-class and especially high-priced animals in the countries south of the equator.

Argentine buyers have invaded Europe and set the high mark in values, purchasing and importing all of the first-class individuals.

Brazil imports her pure-bred cattle from Europe, Argentine and North America. In past years many zebus were brought from India, and their blood has pretty thoroughly saturated the national cattle of Brazil. They are now considered undesirables, and representatives of the breed are no longer kept at the government experiment stations.

The breeds that find favor in the various sections of Brazil and Argentine are: Short-horns, Herefords, Angus, Holstein, brown Swiss, Simmenthal, Flemish and the French Limousine.

Since it has developed that there is a good market south of the equator, conditions governing the importation to South America should be most carefully studied; as success or failure depends largely upon a full understanding of the obstacles which are in the way.

The information gleaned from different sources has led many to believe that young animals bred and raised below the government quarantine line, and naturally immune to Texas fever, would not react when imported to the tick-infested regions of Brazil.

The same should be true in a general sense with regard to northern cattle artificially immunized.

After two years' experience in handling a large number of pure-bred cattle, both naturally and artificially immunized, and imported from below the quarantine line in the State of Texas, to the States of Parana and Matto Grosso in Brazil, I am prepared to say that the foregoing statements are misleading and not altogether in accord with our observations.

In conclusion I beg to submit for careful consideration the following:

Animals Naturally Immune.—Bulls and heifers bred and raised below the quarantine line in North America. (Infested with the Margaropus Annulatus at the time of exploration.) Naturally immune to piraplasmosis as it exists in North America, react to the subcutaneous inoculation of blood from an immune Brazilian bovine, or to natural tick infestation with the Margaropus Australis, the fever tick indigenous to Brazil.

The reaction may be mild and the symptoms scarcely noticeable; however, the course may be acute and terminate in death, with all of the symptoms and post-mortem findings of acute Texas fever.

The older and more mature animals belonging to this class (*naturally immune*) withstand tick infestation much better than the younger, immature bulls and heifers.

Animals Artificially Immunized.—Northern North American bulls immunized in Texas and subsequently inoculated subcutaneously with blood from a Brazilian cow, give a *reaction* which may be mild and transitory, or very acute, ending in death.

The same is true when immunity is acquired through tick infestation from pastures.

Vaccination in North America does not protect against Brazilian infection, although it may modify the course of the disease, making it benign in character.

Importations from England and Argentine suffer from a high percentage of loss from Brazilian Piraplasmosis.

Vaccinated animals from Argentine Republic may also sicken and die, and the results are very unsatisfactory.

Native cows did not react to subcutaneous inoculation with blood from southern Texan cattle.

The importation of pure-bred cattle into Brazil bristles with many difficulties; however they will be overcome in time and we will see the dawn of a new era for the cattle industry in this South American country.

J. H. McNeil.

STATE OF NEW YORK, DEPARTMENT OF AGRICULTURE.

ALBANY, June 3, 1914.

Editor AMERICAN VETERINARY REVIEW, *New York:*

You are probably aware that at the present time this Department is making special effort in the eradication of glanders from New York State. We feel that our methods of diagnosis are becoming so refined and accurate and our methods of control so practical and efficient, it is our hope to gradually close in upon all the infected centers and confine the spread of glanders to the smallest possible area, to the end that this costly plague may be reduced to a minimum, if not entirely eradicated from our State.

During the past year, under the efficient direction of Dr. Gill, with the co-operation of the officials and veterinarians of the City Health Department, the work of controlling glanders in New York City has become creditably systematized, but with all this precaution our official statistics show that a high percentage of all cases of glanders in New York State occurring outside of New York City proper bear origin with the introduction of an infected animal in these localities either from New York City or from some adjoining State.

With these facts in view the Commissioner of Agriculture has seen fit to declare a quarantine against the introduction and distribution of diseased horses in our State and the movement of horses from New York City to other parts of the State without proper inspection. We are enclosing copies of such quarantine orders and will appreciate any assistance you may give this Department.

Yours truly,

J. F. DEVINE,
Consulting Veterinarian.

(2 enclosures.)

STATE OF NEW YORK, DEPARTMENT OF AGRICULTURE.
NOTICE AND WARNING AGAINST GLANDERS OR FARCY.

ALBANY, N. Y., May 28, 1914.

To whom it may concern:

Pursuant to the provisions of Section 91 of the Agricultural Law, I, Calvin J. Huson, as Commissioner of Agriculture of the State of New York, hereby give notice that the contagious or

infectious disease known as GLANDERS or FARCY exists or recently existed in that portion of the State of New York known and designated as The City of New York. Therefore, in accordance with the authority conferred and duty imposed upon me as such Commissioner by the provisions of Article 5 of the Agricultural Law as amended, I hereby order and direct as follows:

1. That no person or persons shall remove or assist in removing from within the said City of New York any equine animal to any point or points outside of the said city during the pendency of this notice and order, unless such person or persons shall have first received a permit duly issued by the Commissioner of Agriculture of the State of New York, authorizing the removal of such equine animal or animals from said city.

2. Nothing in this order shall be construed to forbid the transportation by common carriers of equine animals from points without the State to their points of destination within the State, or to such equine animals transported from points without the State to points in other States, although in such transit they pass through the State; nor shall it apply to healthy equine animals in performance of their daily work.

This notice and order and regulations issued thereunder will continue in full force and effect until formally withdrawn.

CALVIN J. HUSON,
Commissioner.

To whom it may concern:

Whereas, infectious or contagious diseases affecting equine animals in the State of New York are believed to be greatly increased from animals brought into the State,

Therefore, I, Calvin J. Huson, as Commisisoners of Agriculture of the State of New York, pursuant to the provisions of Section 93 of the Agricultural Law, hereby order and direct as follows:

1. That all persons importing or bringing any equine from or through the States of New Jersey, Pennsylvania, Connecticut, Vermont or Massachusetts into the State of New York shall notify the Commissioner of Agriculture of the State of New York in writing immediately upon the shipment of such animals into the State of New York, giving information as follows:

(a) The point of shipment.

(b) The route or routes over which said animal or animals are to come into the State.

(c) The point of destination within the State.

(d) The time or probable time of arrival of such animal or animals at place of destination within the State.

2. That the said animals so shipped, imported or brought in shall be held at such point of destination within the State for inspection and examination by the said Commissioner of Agriculture or his duly authorized representative at least ten days from the time of arrival at such point of destination, unless sooner released by the Commissioner of Agriculture or his duly authorized representative.

CALVIN J. HUSON,
Commissioner.

Grenada, Miss., June 19, 1914.

AMERICAN VETERINARY REVIEW, *New York:*

GENTLEMEN.—Knowing the interest you feel in all veterinary meetings I am herewith enclosing to you the proceedings of the first Mississippi State Board of Veterinary Medical Examination for publication in your journal.

With best wishes for you and your monthly publications I am, with every expression of regard,

WM. P. FERGUSON,
Secretary of Board of Examiners.

PROCEEDINGS, MISSISSIPPI STATE BOARD OF VETERINARY MEDICAL EXAMINERS.

The Mississippi State Board of Veterinary Medical Examiners, viz.: Drs. O. M. Norton, of Greenville, and Wm. P. Ferguson, of Grenada, appointed by the Governor, and Drs. John Oliver, of Columbus; E. M. Ranck, of the Agricultural College; and James Lewis, of Greenwood, elected by the State Veterinary Medical Association, held their first examination in the City of Jackson, Miss., at the Capital on Tuesday, June 16, 1914.

All applicants presenting diplomas from reputable veterinary colleges were given licenses as follows: Drs. E. M. Ranck, A. & M. College; John Oliver, Columbus; O. M. Norton, Greenville; James Lewis, Greenwood; J. D. Townsend, Louisville; B. M. Leigh, Meridian; T. B. Lee, Winona; Ge. S. Smith, Vicksburg; W. R. Edwards, Vicksburg; J. T. Olson, Tupelo; E. M. Buie, Natchez; J. A. Beavers, Canton; J. A. Bargers, Coffeeville; H.

Chadwick, Jackson; I. W. Edwards, West Point; W. L. Gates, Clarksdale, Edward Hiney, Hattiesburg; W. J. Hossley, Vicksburg; Frank Hecker, Meridian; R. J. Heyde, Laurel; E. I. Keller, Okalona; W. O. Ney, Michigan City; Robt. Reves, Moulden; G. P. Sands, Sumner; S. W. Sullivan, Columbus; C. G. Stallworth, Shelby; Thomas Trinder, Vicksburg; P. C. Taylor, Corinth; M. A. Arrington, Laurel; J. F. Barnett, Yazoo City; Frank Henry, Holly Springs; E. S. Norton, Greenville, E. C. Riddle, Louisville; S. J. Horn, Straton; S. E. Osborne, Greenwood; B. S. Barkeley, Macon; E. M. Alderman, Staksville; J. T. Harrison, Amery; E. R. Swim, Indianola; L. E. Miller, Jackson; C. B. Hock, Jackson; B. M. Davenport and Wm. P. Ferguson, Grenada.

Those taking examinations, viz.: B. E. Green, G. B. Moss, G. D. Brock, C. McMillen, all passed and given license except G. B. Moss.

Quite a number of applicants were turned down for lack of satisfactory proof as to qualifications. The Board passed resolutions to take up the matter of Army Bill No. 4541, with their friends and clients and to urge the support of their Senators and to assist Dr. Ranck, Mississippi Secretary for the American Veterinary Medical Association, in soliciting subscriptions to the New Orleans meeting, which takes place in December next.

The Board will hold its next regular examinations in Jackson, Miss., on the 3d Tuesday in June, 1915. All applicants in future that cannot furnish the Board with satisfactory proof that they have passed some State Board of Veterinary Examiners will be required to take the examinations.

Wm. P. Ferguson,
Secretary and Treasurer of Board of Examiners.

Portland, Me., June 7, 1914.

Editor American Veterinary Review, *New York:*

On May 29, 1914, the Maine Board of Veterinary Examiners met in Waterville for the purpose of reorganization. Dr. H. B. F. Jervis was elected president; Dr. W. L. West was elected treasurer, and Dr. W. H. Lynch was elected secretary. Election over, the chief business of the meeting was discussion of reciprocity with other states in having these examinations synchronize more or less with those throughout the nation.

It was agreed among us that, as a means of uniformity, if it were agreeable to you to publish these reports that they should be sent you after each examination—we have four a year—and if the other states saw fit to send their reports we should be very glad to send ours that we may be in entire accord with other boards throughout the nation, looking forward to the time when one examination should entitle a man to practice in any state, which would be fair.

For the convenience of men outside who are coming in to take this examination in Maine, the president desires to have you publish the name and address of the secretary, which is:

W. H. Lynch, D.V.S.,
Portland Veterinary Hospital,
Portland, Maine.

Dr. John H. Jacobus Dead.—Dr. John H. Jacobus, one of the oldest veterinarians of the "West Side," New York City, died suddenly on April 14, 1914. He was a member of the A. V. M. A.

Dr. Steve Trabue Dead.—Dr. Steve Trabue, of Shawhan, Kentucky, died about the middle of June at the Good Samaritan Hospital, Lexington, of a malignant growth of the liver, at the age of fifty years.

Autotherapy Scores.—In Dr. S. A. Peck's report of cases, under caption of *Serum Therapy*, on page 470, present issue, he very justly credits the recovery of his second case to "auto-medication" after treatment had been discontinued. It is certainly very interesting.

Proceedings, New York State Breeders' Association.—These proceedings issued under bulletin number 59 are gotten up in splendid form. A speaking picture of Hon. Calvin J. Huson, Commissioner of Agriculture of the State and president of the association, appears as a frontispiece. The booklet contains 108 pages, which are filled with valuable reading in the form of papers and addresses from experts on breeding problems, and contains excellent cuts of seven of the contributors to the program. It is a very pleasing and instructive report and makes valuable reading.

BIBLIOGRAPHY.

THE COMMON COLICS OF THE HORSE.

THE COMMON COLICS OF THE HORSE—THEIR CAUSES, SYMPTOMS, DIAGNOSIS AND TREATMENT, by H. Caulton Reeks, F.R.C.V.S., Examiner in Pathology and Bacteriology to the Board of Examiners of the Royal College of Veterinary Surgeons, and Author of Diseases of the Horse's Foot. Third Edition, 369 pages, with 32 illustrations. Chicago, Alexander Eger, 1914.

Eleven years ago it was our privilege to review the first edition of this valuable work, published by Baillie, Tindall and Cox, London; and to-day the third edition, even more valuable by the inclusion of additional knowledge on the important subject of which it treats, published by one of our own American veterinary book publishers, has been placed in our hands for review. In our review of the first edition, we made the following statement, on page 1134, Volume XXVI, No. 12, AMERICAN VETERINARY REVIEW (March, 1903). "No practitioner of veterinary medicine will dispute the assertion that, no matter how well a veterinarian may be fitted for every other branch of his calling, his ability to successfully or unsuccessfully cope with the conditions resulting from acute or subacute digestive derangements, may be translated into his success or non-success as a practitioner." We entertain exactly the same view to-day, more strongly impressed upon us if possible, by eleven years more experience with that class of cases. It could not be otherwise; because the longer and closer we study intestinal disorders in the horse, the greater is our appreciation of the number of causes that account for the group of symptoms we have learned to recognize under the head of "colic," and of the necessity for a specific treatment for each of the causes manifested by the symptoms.

Mr. Reeks fully appreciated these facts when he presented his first volume (dedicated, as is the present one, to Sir John McFadyean), and hoped that his work would act as a stimulus which would create a tendency for a more careful study of digestive troubles in the horse by veterinary practitioners; and we feel certain that his hope has been realized; as the subject of intestinal disorders in the horse is surely claiming more than the passing notice of earnest, thoughtful members of the veterinary profession of America who will welcome this third edition with the additional valuable data. The first edition referred to contained 17 chapters that seemed at the time to cover every possible phase of the symptoms, diagnosis and treatment of "colic," the second edition was abreast of the times when issued, and now we have

reached the third edition, with five additional chapters in the book proper and seven additional subjects treated in the appendix, aggregating 128 additional pages over the first edition, devoted to up-to-date findings on the subject of intestinal disorders in the horse as follows: Volume X devotes 13 pages to the elucidation of the subject of the *Subacute Obstruction of the Pelvic Flexure of the Double Colon;* Chapter XVIII devotes 11 pages to the discussion of *Subacute Obstruction of the Caecum;* Chapters XIX, XX and XXI, consider *Displacements of the Double Colon;* devoting 75 pages to the subject. Chapter XXII devotes 3 pages to *The Possibility of the Spontaneous Reduction of the Bowel in Torsion;* Chapter XXIII treats of the *Comparative Rarity of Enteritis;* devoting 6 pages to it. The 20 additional pages in the appendix include the following subjects: (1) *The Use and Abuse of Sedatives in the Treatment of the Equine Colics;* (2) *The Sedatives in Common Use;* (3) *Circumstances Which Have Led the Veterinarian to the Frequent Administration of Sedatives;* (4) *Major Points in an Argument for the More Restricted Use of Sedatives;* (5) *Cases of Colic in Which Sedatives Are of Service;* (6) *Cases of Colic in Which Sedatives Are Harmful;* (7) *Further Remarks On the Use of Aloes in the Treatment of Intestinal Impaction.* All these interesting and instructive subjects, remember, are *additions* to the splendid comprehensive matter embraced in the seventeen chapters and appendix in the first edition, which has taught so many useful lessons on the subject of "colic" and inspired so many veterinarians on both sides of the Atlantic to make a scientific study of this all important subject. So that *Reeks' Third Edition of the Common Colics of the Horse* is at once an inspiration and a guide in the study of one of the most common and fatal conditions to which the horse is heir, and should be in the hands of *all* veterinarians everywhere. The book is well and neatly bound in olive green cloth with gold lettering and is attractive in appearance. The paper is excellent, the cuts good and the type sharp and clear.

YEAR BOOK.

YEAR BOOK OF THE UNITED STATES DEPARTMENT OF AGRICULTURE, 1913; more than 500 pages with 75 illustrations. Washington, Government Printing Office, 1914.

This most interesting report from the government press was received during the month of June. It contains a most interesting and comprehensive report from Secretary Houston, covering 65 pages, a chapter on Applied Entomology, one on Factors of Efficiency in Farming; Promises of New Fruits; Health Laws; The American Thrushes Valuable Bird Neighbors; chap-

ters on Tree Surgery; Supplementing Our Meat Supply with Fish, etc., etc.; Production of Beef in the South; The South American Meat Industry (by Chief Melvin, B. A. I.) and an Appendix which starts with a consideration of Agricultural Colleges in the United States and concludes with a very valuable chapter on Animals Imported for Breeding Purposes for Which Certificates of Pure Breeding Have Been Issued. The cuts of cattle beef and farming are very interesting, and the colored plates of ripe fruit strikingly exact. The book contains much of interest to veterinarians.

POULTRY DISEASES AND THEIR TREATMENT.

Poultry Diseases and Their Treatment, by B. F. Kaupp, M.Sc., D.V.S., Commissioner of Health, Spartanburg, South Carolina; Author of Animal Parasites and Parasitic Diseases; formerly Professor of Pathology, Division of Veterinary Medicine, Colorado Agricultural College, and Pathologist to the Colorado Agricultural Station; formerly Professor of Parasitology, Kansas City Veterinary College, and Director of the Anatomy Laboratory; formerly Veterinary Inspector, Bureau of Animal Industry, U. S. Department of Agriculture; Chairman of Committee on Diseases of the American Veterinary Medical Association, 1911, etc., etc.; 181 pages, with 44 illustrations. Chicago; American Journal of Veterinary Medicine, 1914.

This neat little work came into our hands last month, too late to receive more than an acknowledgment of its receipt. The poultry industry is so great throughout our vast country, and disease amongst the birds so prevalent at times, that modern veterinarians must of necessity be conversant with the pathological conditions to which poultry are heir, and with the proper scientific methods employed in treating them. They will therefore welcome this little work of Prof. Kaupp's, especially written to fill a demand not only from veterinary students in poultry husbandry, but also by veterinary practitioners whose fields of practice bring them in close relation with raisers of poultry. The work is divided into sections, as follows: 1, Anatomy; 2, Sanitation; 3, External Parasites; 4, Internal Parasites; 5, Diseases of the Digestive Tract; 6, Diseases of the Blood; 7, Constitutional Diseases; 8, Diseases of the Liver; 9, Diseases of the Ovary and Oviduct; 10, Tumors; 11, Diseases of the Respiratory Passages; 12, Diseases of the Legs and Feet; 13, Diseases of the Brain; 14, Bacteria of the Intestinal Tract of Chickens; 15, The Egg; 16, Isolation of Non-layers; 17, Malformations; 18, Fractures—Wounds—Anesthesia. A careful consideration of the many subjects treated in each of the foregoing sections, in the thorough manner characteristic of Prof. Kaupp, has left nothing to the imagination in reference to the ailments of poultry and their treatment.

NEWS AND ITEMS.

VETERINARIANS, TAKE NOTICE.

The attention of veterinarians, physicians and dentists is called to the fact that after July 1, 1914, the prescribing of habit-forming drugs is subject to the provisions of the so-called "Boylan Law." This applies to chloral, opium or any of its salts, alkaloids or derivatives, or any compound or preparation of any of these.

Prescriptions for the drugs just enumerated must be written upon specially prepared official order blanks, serially numbered and duplicated, furnished by the local Board of Health. Physicians, druggists, veterinarians and dentists must record the name and address of each person for whom any of these drugs are prescribed. A supply of the official order blanks has been ordered by the Department of Health and it is hoped it will be available for distribution within a few days.

In view of the wide-spread illegitimate use of habit-forming drugs, and of the inadequacy of existing laws to control the evil, it is hoped that physicians generally will heartily co-operate with the authorities, and comply both with the letter and the spirit of the new legislation.

The Boylan Law.

245. Sale prohibited; exception. No pharmacist, druggist or other person shall sell, have or offer for sale or give away any chloral, opium or any of its salts, alkaloids or derivatives or any compound or preparation of any of them except upon the written prescription of a duly licensed physician, veterinarian or dentist, provided that the provisions of this article shall not apply to the sale of domestic and proprietary remedies, actually sold in good faith as medicines and not for the purpose of evading the provisions of this article, and provided further that such remedies and preparations do not contain more than two grains of opium, or one-fourth grain of morphine of one-fourth grain of heroin or one grain of codeine, or ten grains of chloral or their salts in one fluid ounce or if a solid preparation, in one avoirdupois ounce, nor to plasters, liniments and ointments for external use only.

246. Prescriptions; certificates. It shall be unlawful for any person to sell at retail or give away any of the drugs, their salts, derivatives or preparations mentioned in section two hundred and forty-five of this chapter except as herein provided without first receiving a written prescription signed by a duly licensed physician, veterinarian or dentist. The prescription must contain substantially the following: The name in full of the

physician, veterinarian or dentist issuing such prescription, his office address, his office hours, and telephone, and the name, age and address of the person to whom and date on which such prescription is issued. It shall be unlawful for any duly licensed physician, veterinarian or dentist to issue any such prescription containing any of the drugs, their salts, derivatives or preparations mentioned in section two hundred and forty-five of this chapter except after a physical examination of any person for the treatment of disease, injury or deformity. It shall be unlawful for any person to sell at retail any of the drugs or preparations of any of those mentioned in section two hundred and forty-five of this article without first verifying the authority of any prescription containing more than four grains morphine, thirty grains of opium, two grains of heroin, six grains of codeine or four drams of chloral. Such verification can be made by telephone or otherwise. Such prescription so received shall be filled out at the time of receiving the same for the full quantity perscribed and no prescription so received shall be filled out more than ten days after the date which the said prescription be dated. Such prescription, from which no copy shall be taken, shall be retained by the person who dispenses the same and shall be filled but once. Such prescription shall be kept on the general prescription file and given a regular consecutive number on such file. On such prescription shall be inscribed the name and address of the purchaser making such purchase and the date upon which said sale is made. Any person who sells at retail, furnishes or dispenses any of the drugs mentioned in section two hundred and forty-five of this chapter upon a written prescription by a duly registered physician or veterinarian or dentist shall at the time of dispensing the same, place upon the package a label or deliver therewith a certificate stating the name and address of the person selling or furnishing the same, the name and address of the physician, veterinarian or dentist upon whose prescription such sale is made, the date of sale, and the name of the person to whom such sale is made. Any person, other than a manufacturer of any of the drugs mentioned in section two hundred and forty-five or a wholesale dealer in drugs or a licensed pharmacist, licensed druggist, duly registered practicing physician, licensed veterinarian or a licensed dentist, who shall possess any of the drugs mentioned in section two hundred and forty-five or their salts, derivatives or preparations, shall be guilty of a misdemeanor, unless said possession is authorized by the certificate described in this section. Nothing herein contained shall be construed to prohibit the sale of any of such drugs by any manufacturing pharmacist or chemist or wholesale or retail pharmacists or druggists, or to hospitals, colleges, scientific or public institutions, except that such sales shall be made in the manner provided in the next succeeding section.

247. Order blanks; filing. The state commissioner of health shall prepare and furnish to all Board of Health or officers official order blanks, serially numbered in duplicate, bound in book form, with carbon or transfer paper between the duplicate pages. The said official order shall be furnished by the local health board or officer to any local, duly licensed physician, dentist, pharmacist, druggist or veterinarian, upon which must be written all orders for the purchase of any of the drugs enumerated in section two hundred and forty-five of this chapter for the use of such physician, dentist, pharmacist, druggist or veterinarian. It shall be unlawful for any person to sell, furnish or dispose to any physician, pharmacist, druggist, veterinarian or dentist any of the drugs enumerated in section two hundred and forty-five of this chapter without first receiving from such physician, druggist, veterinarian or dentist an official order blank as provided in this section, which official order shall be retained by the person or corporation who sells, furnishes or dispenses any of the drugs enumerated in section two hundred and forty-five of this chapter, and such official order shall be kept in a separate file or book and an entry made or caused to be made

on the order stating the date of sale, the name and address of the purchaser and the name of the person making such sale.

248. Physicians, et cetera, to keep records. All physicians, druggists, pharmacists, veterinarians and dentists shall keep on record the name and address of each person to whom such physician, dentist or veterinarian administers or disposes in any way whatsoever any of the drugs enumerated in section two hundred and forty-five of this chapter, and the quantity so administered, disposed of or given away. Such record shall be preserved for five years and shall always be open for inspection by the proper authorities. Any violation of this section is hereby declared to be a misdemeanor.

ENTERS THE B. A. I. SERVICE.—Dr. Bernard Johnsen, North Fort Worth, Texas, has entered the government service in the B. A. I.

ENTERS THE FIELD OF GENERAL PRACTICE.—Dr. S. J. Marquardt has located in Barnersville, Ohio, to engage in general practice. The doctor formerly lived at Monroeville, that state.

NATIONAL ASSOCIATION OF B. A. I. EMPLOYEES will meet in Denver, Colorado, August 10, 1914. Specific place of meeting will be announced in the August REVIEW.

WASHINGTON STATE VETERINARY MEDICAL ASSOCIATION.—The above association held a two days' meeting at Walla Walla on June 18-19, at which a nice programme was enacted.

DR. D. ARTHUR HUGHES RETURNS TO CHICAGO.—Under date of June 8, we received a communication from our esteemed collaborator, Dr. D. Arthur Hughes, advising us that he had returned from Fort Worth, Texas, whither he was sent by the Quartermaster's Department of the United States Army.

DR. EVENSON IN FIELD SERVICE IN MINNESOTA.—Dr. Harry Evenson recently returned from the Philippines, where he was in the federal service, is now field veterinarian for the State Live Stock Sanitary Board of Minnesota, with headquarters at Olivia, that state. The Live Stock Board is working in co-operation with the B. A. I., in an effort to control hog cholera.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.—The seventeenth semi-annual meeting of this most excellent association will be held at Northfield July 8-9. Our esteemed friend, the veteran secretary of the association, with his usual activity and earnestness is making preparations for a meeting that no one can afford to absent himself from.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n	Mar. 5-6-7, 1914	Auburn	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.	June 10, 1914	141 W. 54th St.	P. K. Nichols, Port Richmond, N.Y.
American V. M. Ass'n	Dec., 28-31, 1914	New Orleans, La	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n	January 5-6, 1915	Little Rock	R. M. Gow, Fayetteville.
Ass'n Médécale Veterinare Française. "Laval"	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago	2d Fri. each month.	Chicago	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha	3d Mon. each month.	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n	Monthly	St. Joseph	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n	December 10, 1913	San Francisco	John F. McKenna, Fresno.
Central Canada V. Ass'n	Feb. and July	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n	June and Nov	Syracuse	W. B. Switzer, Oswego.
Chicago Veterinary Society	2d Tues. each month.	Chicago	D. M. Campbell, Chicago
Colorado State V. M. Ass'n	May 28-29, 1914	Ft. Collins	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n	Aug. 4, 1914	Waterbury	B K. Dow, Willimantic.
Delaware State Vet. Society	Jan , Apl., July. Oct.	Wilmington	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.	3d Mon. each month.	Newark, N J	J F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n	2d week, July, 1913	Rochester	J. H. Taylor, Henrietta.
Georgia State V. M. A.	Dec. 22-23, 1913	Atlanta	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.			Louis P. Cook, Cincinnati.
Illmo Vet. Med. Ass'n.	July 17, 1914	E. St. Louis	L. B. Michael, Collinsville. Ill.
Illinois State V. M. Ass'n	July 15, 1914	Springfield	L. A. Merillat, Chicago.
Indiana Veterinary Association	Jan. 14, 1914	Indianapolis	A F. Nelson, Indianapolis.
Iowa Veterinary Ass'n	Pending	Pending	C. H. Stange, Ames.
Kansas State V. M. Ass'n	Jan. 6-7-8, 1914	Manhattan	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.	Oct. & Feb.each year	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n.	2d Tues. each month.	Philadelphia	Cheston M. Hoskins.
Lake Erie V. M. Association	Pending	Pending	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n.	Sept., 1914	Lake Charles	Hamlet Moore, New Orleans, La
Maine Vet. Med. Ass'n.	July 3, 4, 1914	Houllon	H. B. Wescott, Portland.
Maryland State Vet. Society		Baltimore	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n	4th Wed. each month.	Young'a, Boston.	J. H. Seale, Salem.
Michigan State V. M. Ass'n.	Feb. 3, 4, 1914	Lansing	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n.	July 8-9, 1914	Northfield	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.	1914	Vicksburg	J. D. Townsend, Louisville.
Missouri Valley V. Ass'n.	Jan. 27, 28, 29, 1914	Kansas City,Mo.	Hal. C. Simpson, Denison. Ia.
Mississippi Valley V. M. Ass'n	Semi-Annually	Galesburg, Ill.	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n	July, 1913	Kirksville	S. Stewart, Kansas City.
Montana State V. M. A.	Sept. 24, 25, 1913.	Helena	A. D. Knowles, Livingston
Nat'l Ass'n B. A. I. Employees	2d Mon. Aug., 1914.	Denver, Colo	S. J. Walkley, 135 N. W. Ave., Milwaukee, Wis.
Nebraska V. M. Ass'n.	1st Mo. & Tu.,Dec.'13	Lincoln, Neb	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.	August 11-12-13,1914	Rochester	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.	June 23, 1914	Wilson	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n.	Week of July 20, 1914	Fargo	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.	Nov. 1913.	Delphos	E. V. Hover, Delphos.
Ohio State V. M. Ass'n.	Jan. 14, 15, 1914	Columbus	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.	Annually	Upper Sandusky.	F. F. Sheets, Van Wert. Ohio.
Ohio Valley Vet. Med. Ass'n.			J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.	Fall, 1913.	Oklahoma City.	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.	1st Week in Feb.1914	Toronto	L. A. Willson, Toronto.
Pennsylvania State V. M. A.	Mar. 3, 4, 1914	Philadelphia	John Reichel, Glenolden.
Philippine V. M. A.	Call of President	Manila	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.	4th Tues. each month.	Portland, Ore	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.		Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.	Jan. and June	Providence	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns.	Pending	Pending	B. K. McInnes. Charleston.
South Illinois V. M. and Surg. Ass'n.	Aug. 4-5-6 1914	Salem	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors	1st Wed. fol. the 2d Sun. each month.	St. Louis	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.	June 17, 1914	Reading	W. G. Huyett, Wernersville
Soc. Vet. Alumni Univ. Penn.		Philadelphia	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.	Pending	Madison	S. W. Allen. Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.	Jan.. Apl., July, Oct..	Los Angeles	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp.	4th Tues. each month	407 Illinois Ave.	H. R. Collins, South St. Joseph.
Tennessee Vet. Med. Ass'n.	November. 1914	Nashville	O. L. McMahon, Columbia.
Texas V. M. Ass'n.	Nov., 1913	College Station.	Allen J. Foster, Marshall
Twin City V. M. Ass'n.	2d Thu. each month..	St. P.-Minneap.	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n.	Spring of 1914	Salt Lake City.	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n.			G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia	3d Wed. each month.	514 9th St., N.W.	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ.	1st Sat. each month.	Wash'ton, D. C.	J. M. Cashell, 2115 14th Street.
Vet. Ass'n of Manitoba	Feb. & July each y'r.	Winnipeig	Wm. Hilton, Winnipeg.
Vet. Med. Ass'n of N. J.	July 9, 1914	Montclar	E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City	1st Wed. each month.	141 W. 54th St..	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club	Monthly	Jersey City	T. F. O'Dea Union Hill, N. J.
Virginia State V. M. Ass'n.	July 9-10 1914	Staunton	Geo. C. Faville, North Emporia.
Washington State Col. V. M. A.	1st & 3d Fri. Eve.	Pullman	R. J. Donohue, Pullman.
Washington State V. M. A.	June 18-19, 1914	Walla Walla	Carl Cozier, Bellingham.
Western N. Y. V. M. A.	June 24, 1914	Buffalo	W.E.Fritz,358 Jefferson St.,Buffalo
Western Penn. V. M. Ass'n.	3d Thu. each month..	Pittsburgh	Benjamin Gunner, Sewickley
Wisconsin Soc. Vet. Grad.	Feb. 10, 11, 1914	Milwaukee	W. W. Arzberger, Watertown
York Co. (Pa.) V. M. A.	June, Sept.,Dec.,Mar	York	E. S. Baustieker, York, Pa

PUBLISHERS' DEPARTMENT.

Subscription price, $3 per annum, invariably in advance: Canadian subscriptions, $3.25; foreign countries, $3.60; students while attending college, $2; Students in Canada, $2.25; single copies, 30 cents in U. S. **Copy for advertisements should be received by 10th of month.**

Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address. **Make all checks or P. O. orders payable to American Veterinary Review.**

ANTIPHLOGISTINE STILL LEADS against all imitators as a perfect aseptic application in all inflammatory conditions. See lower half of inside back cover page, this issue. Write for booklet and spatula, mentioning the REVIEW.

MAKE IT A ROUTINE PRACTICE to inject *all* horses that you are treating for *foot wounds*, or for any form of wound that by its character may predispose them to an invasion of tetanus bacillus, with 1,500 units of prophylactic antitetanic serum. C. Bischoff & Co., whose announcement appears on page 5 (adv. dept.) of present issue make a special feature of their *Antitetanic Serum*.

CHINOSOL, THE SAFE ANTISEPTIC. In treating wounds on animals two important points have got to be taken into consideration. One of these points is in common with human patients, that is the requirement of an *efficient* antiseptic; the other applies particularly to animals, and more especially to small animals, that are difficult to prevent from licking themselves; and that is that the antiseptic used must be positively non-poisonous. Such a combination of *efficiency* and *non-toxicity* we find in Chinosol. See announcement on the inside back cover page (upper half) and write for sample and full literature, mentioning the REVIEW.

AMERICAN VETERINARY REVIEW.

AUGUST, 1914.

EDITORIAL.

EUROPEAN CHRONICLES.

Paris, 15th June, 1914.

INFECTION BY KOCH BACILLUS IS AN IMMUNIZING DISEASE. —In a masterly article by Prof. Bernard of the faculty of Medicine of Paris in relation to the *Actual Conception of Human Tuberculosis and the Various Stages of Koch's Bacillosis in Man,* the author takes in consideration the important problems. At first, he treats of the frequency of tuberculosis according to the age of the individuals and in the second part, he considers this important question, viz.: The infection by the bacillus of Koch as an immunizing disease. This part interesting principally veterinarians, I reproduce it.

" When one brings together the first notion that tuberculosis is taken in young age, with that of the fact of its diminution in gravity and of the increase in latent tuberculosis with age, one cannot help concluding that that disease necessarily immunizes most of the subjects that it attacks.

This conclusion would, in days gone by, have raised a peculiar feeling in the opinion of many. So was it, with the assertions of Marfan, when in 1886 he stated that the subjects, who were affected with lupus and scrofulae and had recovered, had become refractory to an ulterior attack of tuberculosis.

These clinical facts remained ignored until the day came when they drew a new strength by the experimental discoveries made upon tuberculous immunity.

It is Behring, then Calmette and Guerin, who proved the possibility of conferring a temporary immunity to bovines.

In guinea pigs, one of the animals most susceptible to infection of tuberculosis, the obtaining of this immunity is not impossible and has been realized by Borrel and Romer, who reproduced it in sheep, while Krauss had the same result with monkeys.

Finally Webb and Williams, by an experimental determinism, resembling somewhat the conditions of human infection, created immunity in guinea pigs by a progressive bacillar impregnation; started from the inoculation of bacillar unities, they succeeded by increasing inoculation to have the pigs support formidable doses of bacilli, which would unavoidably kill fresh animals.

This collection of facts proves that bacillar infection gives rise to a true auto-vaccination of the organism. This condition manifesting itself by the manner in which the organism reacts against new infections. In relation to this, the discovery of what is called to-day 'the phenomena of Koch,' appears as most important in the study that we make.

It is known, when a subcutaneous inoculation of virulent bacilli of Koch is made on a guinea pig, that a tuberculosis will follow in various steps of development; it is, after a varying lapse of the incubation, according to the dose and the virulency of the bacillus, a nodosity, which ulcerates at the point of inoculation, followed by adenopathy and later by a generalization of the lesions in the spleen, liver and lungs, which kill the animal.

When in a guinea pig previously tuberculized, a new subcutaneous inoculation is made, the phenomenas are very different. There occurs very rapidly a *necrostic* ulceration at the point of reinoculation, which is followed by the elimination of the necrosed parts and of the microbes that they contain; then,

soon appears cicatrization. During all that time, there has been no glandular reaction. Such is the phenomena of Koch."

* * *

"Already before the publication of Koch, Charrin and S. Arloing had observed the difference that characterized tuberculous reinoculations from the first inoculation; but these authors had described, not a more mild reaction, as Koch did, but on the contrary, a most severe reaction. Later, Straus, then Hamburger, observed sometimes the mild reaction or again the severe. One or the other being obtained at will, according to Hamburger. Repeating and modifying the experiments of O. Bail with his peritoneal inoculation, Rist and his students have recently shown that an essential difference does not separate the two types of reaction, which after all are due to experimental conditions. Therefore, what characterizes tuberculous reinfection before all, it is that the animal organism reacts differently than in the first infection; in one word, it is that this last has left a deep modification in the fluids of the organism towards the specific germ, modification indicated by the different manner in which it reacts against it, and that is what is designed since von Piquet, by the word allergia (from the Greek, other reaction); this allergia is manifested either by phenomenas of resistance, according to the conditions of the reinfection; it is then, without doubt, a question of quantity and of quality of the bacilli, a question of dose and of virulency, which intervenes in the phenomena in a measure that we only begin to perceive. At any rate, as demonstrated by P. Courmont, allergia represents a state of unsteady equilibrium, which varies between the two opposed conditions of hypersensibility or of resistance; those not due to different and contrary processes; in reality they are but two aspects of tuberculous immunity, manifesting to the same title of the humoral modification produced by the first infection."

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Continuing the consideration of his valuable paper, Prof. Bernard arrives at the following conclusions:

This actual conception of tuberculosis may be entirely resumed in three propositions:

1. The first bacillar infection (primo-infection) takes place in children. As Burnet wrote it, pulmonary phtisy of adults is but the end of a story whose origins are more or less old.

2. The manifestations allotted to adults are due to a reinfection; they are conditioned according to the humoral state left by the primo-infection.

3. Bacillar infection is indeed an immunizing infection. This state of immunity, or better, of allergia, varies, is unequal and unstable. Tuberculous allergia, resulting from primo-infection, governs the evolution of reinfections.

The practical importance of these new notions is considerable. Prophylaxy must take them into consideration for all the measures which will prevent any possible reinfections, which are the great danger of tuberculized. Finally, as Calmette has demonstrated, therapeuty must direct its way towards the possibility of antituberculous vaccinations.

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Strong and Weak Organisms With Virulent Microbes.—It is certain that the condition of organism enters more or less in the aptitude that one may possess for the reception and cultivation of virulent microbes and on that account in the modern methods which are resorted to in the anti-tuberculous struggle, the preferences of the medical world are to render the people intertuberculisable, and to suppress all debilitating factors. But there seems to be one point which is overlooked, viz.: That clinics have never established the fact that weak organisms were alone liable to contract tuberculosis, and besides experiments have clearly proved that the most flourishing organisms were able to receive and liable to cultivate the germ.

Such was expressed in a communication made by the learned Professor Chauveau before the Academie des Sciences.

In 1868 Chauveau stated that sixty subjects of bovine species had all contracted tuberculosis by the ingestion of virus, and this peculiarity so well established for that disease was specific to it.

Laboratory studies and practice of preventive inoculation have shown that such is not the case; inoculation of the vaccine of variola in man and that of small pox in bovine succeed as well in strong subjects as it does in debilitated.

To demonstrate positively that, as in the case of tuberculosis, "the conditions of the resistance of the culture media are indifferent to the success of the development of virulent agents," there must be that the penetration takes place through the natural ways of contagion—and Chauveau, in the course of experiments he had made on the conditions of the propagation of variola in flocks of sheep, had exposed simultaneously strong and weak animals to the natural infection.

These experiments had for their object the study of the mechanism of the mediate contagion of the disease without the intervention of any intermediate. Two lots of sheep were isolated in the two extremities of the same stable. The first lot was formed of variolous sheep in the stage of eruption. The second of fresh sheep, of same breed and origin as the sick ones.

After 15 days no change had taken place in the sheep of the second lot, even in their temperature.

Two suppositions prevailed then: Either the virus from the first lot had not reached those of the second or the organism of these presented a refractory medium to the development of the disease. The fresh sheep were then mixed with the sick ones, they became infected and if they had remained healthy it would have been that they had not received any germ from the contaminating lot. All the sheep of the second lot were not in the same resisting condition, some were debilitated by parasitic diseases, they all took the disease.

Therefore, "nothing distinguishes vigorous organisms from weak ones from the point of view of their aptitude to receive and cultivate the virus of variola"—but it is observed "that

there is a greater sensibility of the weak subjects to the injurious effects of the invasion of the virus."

Those organisms behave in the same manner for diseases with slow evolution as they do with tuberculosis.

"Only the direct war of the agent of tuberculosis and the defence of the healthy subjects against the infesting action of bacilli carriers are indicated by science as a means able to arrest, diminish and suppress the terrible ravages of this scourge."

"Exception to those general rules of public and private hygiene would, in the case of tuberculosis, be scientific nonsense."

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Bacillemia Amongst Tuberculous Subjects.—As is known, that is a question which for ten years has been the object of the most contradictory publications. In a recent number of the *Annales de Medecine,* there is a critical review of all those and of the systematic researches relating to them.

After a concise exposé of the question, the writers pass in review the methods resorted to, to look for the bacillus of Koch in the blood and they discuss the interpretation of the facts that have been published. They conclude that those who have made these interpretations and claim to have found in tuberculous subjects a very great frequency of bacillemia, they had obtained those results only by erroneous technics. With correct and proper ones, the bacillus is found only exceptionally in the blood, either during a chronic or an acute tuberculosis. Even in granulic cases the presence of bacillemia, although more frequent, is still uncertain and not constant.

Perhaps the examination of very large quantities of blood would give more numerous positive results, but it would nevertheless demonstrate at the same time that the bacillus is not in abundance in the blood of those sick individuals.

Consequently, when it exists, bacillemia cannot be considered as a real septicaemia in tuberculosis, at least in the classical form.

With those diseased subjects, bacillemia indicates not an infection of the blood, but a bacillar migration, which commands the secondary localization of the disease. There exists perhaps a permanent bacillemia in granulic subjects and in other forms of the bacillar infection; but in chronic patients there occur only inconstant and transitory bacillemic manifestations of which the determinism and clinical expression remain yet unknown.

Practically, the presence of bacillemia is without value for the diagnosis, prognosis and prophylaxy of the disease.

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Surgical Applications of Ether Besides Anesthesia.—An interesting article of Practical Medicine appeared in the *Presse Médicale*.

For a long time ether has been used in surgery, it has almost no toxicity, its quite great antiseptic power justify its uses; besides, it dissolves fats and its quite rapid evaporation permits its use as a cold substance likely to bring, in some cases, a marked revulsive effect.

All those qualities have found their applications in surgery, although many are limited or even given up. By opposition *permanent dressings* with ether are yet in favor, and *washings* with ether seem also to acquire a great importance in abdominal surgery and particularly in suppurative peritonitis.

Let us consider the first, viz.: The *permanent dressings with ether.*

They are very simple to apply—one bearing in mind that ether evaporates quickly and that he must operate rapidly also. The dressing must be wide, very wide, beyond the size of the spot on which it is applied and must be hermetic so as to keep the longest time possible the ether in contact with the teguments.

For this, a piece of impermeable stuff is prepared, of sufficient size and covered with ordinary (not hydrophile) wadding. The region has been most thoroughly cleaned, the skin brushed

with soap and washed with boiled water, aseptic compresses are applied all round and impermeable cotton put under the wound. It is only immediately when the whole dressing is to be closed that compresses, soaked with sulphuric ether are put on the wound. The whole is covered over with an impermeable envelope. A roller is put on a little tight on the extremities of the dressing to make it more hermetic.

Thus is realized, a true ether embalming. It sends its vapors in the most remote parts of the wound and sterilizes all the surrounding skin.

This dressing finds its peculiar indications in large contused wounds. with edges torn and smashed, with anfractuous cavities that no washing could clean sufficiently.

If the wound is recent and not suppurating yet, the dressing can be left on 5 or 6 days, or even more, watching the temperature of the patient. This does not rise, and in removing the dressing one is surprised to find a clean wound in full granulating condition and in good way of repair.

Besides the cases of complicated fractures, infected and suppurating wounds, abscesses, lymphangitis, erysipelas, etc., ether dressings have done wonders in case of *burns*. The extent of the lesion being no counter indication, ether not being toxic.

We feel that this new application of ether can find its indication in our practice.

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Bibliographic Notices.—Internal pathology: *Nutrition, Auto-intoxication, Urinary Apparatus, Skin:* (Pathologie interne, nutrition, auto-intoxication, appareil urinaire, peau), by Prof. Cadeac, of Lyon.

This new volume of the world-wide known Cadeac Encyclopedia is a book of over 500 pages, with 143 illustrations, published by J. B. Bailliere & Sons.

Part of the second edition of the Internal Pathology, this volume takes the entire consideration of the diseases of nutri-

tion by auto-intoxication of the urinary apparatus and of the skin.

In the diseases of nutrition are considered diabetes, obesity and gout; the other affections, such as achondroplasia, rachitism, bony cachexia, snorting disease, equine othomalena, etc., etc., are treated very concisely as they have already occupied full attention in the first volume of the Surgical Pathology, by the same author.

In diseases by auto-intoxication is only mentioned in this volume the study of paroxystic muscular hemoglobinuria, the many other affections due to auto-intoxication have also been treated in other volumes of the Encyclopedia. But if hemoglobinuria occupies now a pre-eminent place, it is due to the minute study that the author has made of it; advocate of the theory of the auto-intoxication of digestive origin, Cadeac treats the subject from this point of view as an intoxication promoted by temporary renal insufficiency, made more serious by cold exposure or influence.

For the diseases of the urinary apparatus, they are the revised of the first edition, exclusively and entirely made by the author.

The skin diseases have been classified in a new way, which has rendered their description more rational. Divided into nine chapters, they treat successively of trichoxis, eczematous dermitis, keratosis, cutaneous hypertrophies, neuro-dermatosis, artificial or pseudo dermitis, microbian dermatosis, parasitic and finally those due to insects.

The work is arranged as all the others of the Encyclopedia, and, in succession, all the diseases in the different species of domestic animals are considered.

The book will be well appreciated by all those who will read it, students and practitioners.

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Journal of Comparative Pathology and Therapeutics.—This excellent publication, at the head of which we find the names of two of our most worthy confrères, Sir John

McFadyean and Sir Stewart Stockman, has begun its twenty-seventh volume this year, and in this part—that of March—there are subjects which are of unusual interest.

Amongst the general articles are one on *Equine Granuloma in Australia,* by Lecturer J. C. Lewis, D.V.S., of the School of Melbourne University—a well documented article, richly illustrated by views of granuloma of the carpus, of the metatarsus, of the abdomen and with micro-photographs. Comparative pathology occupies also in this number a valuable place. *On the pathology of the thyroid gland in wild animals* is a communication from Herbert Fox, the Pathologist of the Laboratory of Comparative Pathology of the Philadelphia Zoological Garden; where at first some generalities on goitres, a number of cases are presented, viz.: On a lioness, wolf, raccoon, leopard, hyena, dingo, gnu, hawfinch, parakeet, raccoon-like dog, golden pheasant, tasmania devil, skunk, opposum.

After perusing that article, the reader must ask himself to what limits the study of comparative medicine may carry him.

In this number there is also the continuation of the article by Major-General T. Smith, F.R.C.V.S., upon the *Early history of veterinary literature and its British development.* This article is but the continuation of those published in a previous number of the Journal, and brings the reader within the year of 1564. Part 1 of Vol. XXVII continues the good work which has made its efforts so well appreciated by all veterinary and comparative pathologists.

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The bulletin of the Department of Agriculture, No. 65, of the contributions of the Bureau of Animal Industry, is a professional paper addressed by John R. Mohler, V.M.D., the learned Chief of the Pathological Division. Its subject is of the greatest interest and certainly every veterinarian will do well to read it.

It treats of *cerebro-spinal meningitis* (forage poisoning). As one who has had the sad opportunity to observe several outbreaks of this terrible disease, we were very interested in the

reading of this bulletin that those who in their practice may meet with in their daily calls will find on the history nomenclature, etiology, occurrence, symptomatology, lesions and treatment, informations which would be difficult to gather by the perusal of classical works.

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Notice of Pamphlets Received and Others.—B. A. I., Dairy Division—*Origin of Some of the Streptococci Found in Milk,* by L. A. Rogers and Arnold O. Dahlberg.

Reduction of Arsenic Acid to Arsenious Acid by Thiosulphuric Acid, by R. M. Chapin.

The *Ophthalmic Test for Glanders,* by A. D. Melvin, Chief of the Bureau.

U. S. Department of Agriculture. Farmers Bulletin 569.

Texas or Tick Fever, by John R. Mohler, V.M.D., Chief of the Pathological Division.

Cysticoccus Ovis, the Cause of Tapeworm Cysts in Mutton, by B. H. Ransom, Chief, Zoological Division, B.A.T.A., handsomely illustrated and complete pamphlet with historical summary; life history, pathology, etc., etc., and bibliography on the subject.

Agricultural Journal of the Union of South Africa, March, 1914.

Vol. II, *First International Congress of Comparative Pathology*—reports and communications (to be reviewed later).

The Cornell Veterinarian—January, 1914. Official publication of Cornell University.

Announcement of the State Veterinary College—1914-1915.

Notes on the *Surgery of Fistulous Withers,* by Profs. W. L. Williams and J. N. Frost.

Retained Placenta in the Cow, by Prof. W. L. Williams.

Proceedings of the American Veterinary Medical Association—1913. (To be reviewed later.)

Bureau of Animal Industry. Bulletin of the U. S. Department of Agriculture, No. 76. *Laboratory and Field Assay of*

Arsenical Dipping Fluids, by Robert M. Chapin, of the Biochemic Division.

No. 79. *Immunization Tests With Glanders Vaccine,* by John R. Mohler and Adolph Eichhorn, of the Pathological Division. A. L.

THE SWIFT, STRONG RUSH TO FINAL VICTORY.

The Army Veterinary Service Bill (H. R. 4541) Is Practically a Law—Crowd Behind It and Push It Through the Senate.

Nine-tenths of the work of making the Army Veterinary Service Bill (H. R. 4541) a federal statute is over. Early in February it passed the House Military Committee unanimously. Far better than that, on June 29th it passed on the floor of the House, again without a vote against it. Best of all, on June 26th it was favorably passed by the whole Senate Committee on Military Affairs and was recommended for passage on the floor of the Senate. All there is to do now is to get it passed on the Senate floor. Of course, it is on the Senate calendar and is nervously waiting its chance to get off the spindle at the time when Senator Chamberlain, the chairman of the Senate Military Committee, can get the floor at the time the bill is reached. In a few jiffies then the vote of the Senate will take place, and, if the bill passes, the signature of President Wilson will make it a law.

This, as it reads here, may seem all well enough. But there is the torturing thought that the calamity may occur that we cannot get the bill through on the floor of the Senate. Brethren of the profession, the prevention of that disaster is entirely in your hands. The three central figures in the scene when the bill comes to a vote on the Senate floor will be Vice-President Marshall (presiding officer of the Senate), Senator Kern, leader of the Democrats in the Senate, Senator Chamberlain, chairman of the Senate Military Committee. All these men are for the

bill. Mr. Kern introduced the bill into the Senate. Mr. Chamberlain and his committee have just recommended that the bill be made a law, and the Vice-President is our friend.

The dangers are two: First, the Senate calendar is loaded with bills and there is the painful possibility that ours may not be reached. Second, there is the terrible chance that something may go wrong should the bill be called up for a vote. What will this or that senator attempt to do?

If the bill has not passed the Senate by the time this number of the REVIEW reaches our readers, we beg them to remember that the seed of destiny is in their hands. The bill has gone nine-tenths of its passage through Congress and will become a law if we muster yet a little more force now. For thirty-five years we have fought for this issue and the best missionary spirit of the profession has gone into it. Tell your senator of the good such a law (as the enactment of H. R. 4541) would be to the army, to the country and to your state and community. We are a band of patriots kindled with fire from the altar of truth and justice. Our forefathers at Bunker Hill never fought harder than we against tyranny and for the right; against error and for the truth. We yield nothing to our senators in patriotism; we crowd behind this bill because it is for the good of our country.

G. S.

PLEASURABLE ANTICIPATIONS IN CONNECTION WITH A. V. M. A. MEETING AT NEW ORLEANS.

> Thos. Jefferson in his "Notes on Virginia" says: "The "Natural Bridge, the most sublime of Nature's works! * * * * "It is impossible for the emotions arising from the sublime to be "felt beyond what they are here: so beautiful an arch, so "elevated, so light, and springing as it were up to heaven! The "rapture of the spectator is really indescribable!"

While a great number of American veterinarians are "on the other side" for the International Congress in London,—a splendid representation at that important international gathering —many loyal sons have been compelled to remain at home

through a call to duty there. It is fortunate that such a large representation were able to attend the congress, so that America might occupy a prominent place on the programme, and in the proceedings that will become history at the close of the London congress; and we rejoice in the realization.

Amongst those whom duty has detained at home, most to be commended, are the men who have foregone this opportunity of visiting Europe under such exceptional conditions in order to prepare for the coming meeting of the American Veterinary Medical Association at New Orleans in December. December at this writing seems a long way off, and yet it is not too long to indulge in thoughts of anticipation. It seems but yesterday since we began to anticipate the European tour and the London congress, and now they are nearly in the past. But many of us even who were in the end unable to participate in it got considerable pleasure out of anticipating such participation. So let us begin early to enjoy in anticipation a trip to New Orleans, and hope in this case that *all* may also enjoy the realization. It seems too *much* to anticipate the trip and the sojourn in the beautiful city of romance all at once, so let us take it in instalments, and in this first one picture a trip that will take us through the enchanting Shenandoah Valley and thence to the Southland. This route, via the Pennsylvania and the Norfolk and Western Railway, will especially commend itself to members of the A. V. M. A., their families and friends, from Middle, Atlantic and New England States, and their neighbors up north in Canada, to whom it will be a direct route; and the beauties of it and the wonderland that it will traverse will be sufficient to attract others to whom it may not appeal from the viewpoint of a mile-saver. Canadians, New England and Atlantic State members would make New York City their starting point; others in Pennsylvania would start from Philadelphia or Harrisburg, and so on down the line. We will not go into the technique of route at this time, but refer to some of the beauties and wonders found early in the trip to New Orleans, if the route which lies over the Norfolk & Western, or what is termed by railroad men as the New York and New Orleans short line.



"The Natural Bridge, the most sublime of Nature's Works."

—Thos. Jefferson

Let us romance a little on the scenery at this time and indulge in cold travel details later. There are the Alleghany Mountains and Valley, near Shawsville, Virginia, Castle Rock, New River, Virginia, Roanoke Valley, the Falls near Buena Vista, Natural Bridge, one of nature's wonders, like the mighty canyon of Arizona, that makes man realize his physical insignificance, and then



Skyland Elevation 4,000 Feet—Near Luray, Va.

the wonderful nature's architecture and artistic beauty of the Luray Caverns, at Luray, Virginia, which attract visitors from all parts of the world. Three hours can be devoted en route in traversing the interior of the caverns, electrically lighted, so as to reveal all their wonderful formations. These caves, which excel all others in the combined extent, variety, scientific interest and beauty of their calcite formations, were discovered in 1878, and shortly afterward opened to the public; although the full extent of their subterranean depths was not then known, or even dreamed of, and not until thoroughly equipped exploring parties had penetrated seemingly endless chambers and labyrinthine passages were their boundless riches disclosed and made accessible to visitors. There is the Ball Room, the Giant's Hall, the Fish Market, Skeleton Gorge, the Natural Bridge, Organ and Chimes in Cathedral, and Saracen's Tent, each more wonderful and awe-inspiring than the other. It is not possible to describe the scenes that fill the beholder with mute wonder, as he stands gazing spell-bound at the grandeur in the fantastic shapes, in the almost imperceptible silence, and the weird in-

fluence of this subterranean realm; stands amazed in the royal chambers of the King of Nature. Various apartments and objects have been named in honor of some distinguished personage, or after something to which they bear a striking resemblance.

The Elfin Ramble, an open plateau five hundred feet long by one hundred in breadth, is the playground of the princesses of this fairy realm. Pluto's Chasm, a wide rift in the walls, contains a spectre clothed in shadowy draperies. Hovey's Hall is adorned with statuary and stalactite draperies, which, for beauty of coloring, translucency and symmetrical folding, are unexcelled



Caverns of Luray—Luray, Va.

by anything in the cave. Giant's Hall is a vast space, embracing several chambers. Heroic sentinel forms loom up on every side, guarding the marvelous beauty of Titania's Veil, and watching over the crystal waters of Diana's Bath. The Saracen's Tent, the Cathedral, with its grand organ, and the Bridal Chamber, all bear striking resemblance to the objects for which they are

named. Hades, a region sparkling with limped lakes and peopled with goblins, receives its name from the bewildering windings and labyrinthine meanderings through which the tourist must tread his way. Notwithstanding its uninviting name, it is a very attractive portion of the cave and contains many wonderful formations, and the Ball Room, a magnificent apartment, gorgeously furnished, is full of interest.

And so we might write on and still have only suggested the beauties and the wonders that are in store for visitors to the beautiful Caverns of Luray, which are formed under a great hill in Page Valley. This hill has an elevation of about 1,200 feet above sea level, and rises about 200 feet above the surrounding valley. But we will content ourselves with these few suggestions of what Virginia, the late home of our A. V. M. A. secretary, offers, and in a future number will endeavor to depict some more of the beauties of the route as it continues in the direction of the Gulf.

Note.—After the foregoing was in type, we received a communication from the passenger agent of the Norfolk and Western, with some specific suggestions, which will be found on page 582 of this issue.—[Editor.]

CAMPAIGN OF LOBECK BILL CONTINUED FROM WISCONSIN—CONGRESS ENGROSSED IN ANTI-TRUST LEGISLATION.

It was our great pleasure to receive a call from Secretary Walkley, of the National Association of B. A. I. employees, on July 6. Dr. Walkley left Washington (where he had been for about two months, devoting his energies in the interest of the Lobeck-Lewis bill) for New York on July 3, and when he left us on July 6 to get the midnight train for Milwaukee he did so reluctantly, knowing that when he opened his eyes after a night in the "sleeper" he would have passed far beyond the alluring

atmosphere of the great American metropolis. While here the doctor made good use of his time, having gotten around and conferred with several Bureau officials, despite the fact that he had a national holiday and a Sunday in his brief sojourn with us. He got in a lot of social work too; visited the New York Zoological Park in the Bronx, was entertained by officers of Branch 19; attending a ball game between the Phillies and the Giants with Secretary McCarthy of that branch, and in the evening they were joined by Dr. and Mrs. Geo. W. Famous at a theatre party. He also had a conference with Chairman H. R. Meyers of the Ways and Means Committee of the Federal Civil Service Society of New York; visited Ellis Island, where immigration officials explained to him the details of handling immigrants, and had just begun to see New York when he had to tear himself away and head for Milwaukee, from which point he will continue his campaign in the interest of Bill H. R. 9292—S. 5720. Anti-trust legislation is engrossing Congress so that bills of the nature of this one cannot get a hearing for some time, and there is a possibility of its not being reached in the present session. Dr. Walkley has worked hard for the measure and is still working, and is deserving of the gratitude of all B. A. I. employees, which we are sure they all feel.

NEW YORK CITY THE LOGICAL PLACE FOR THE THIRD ANNUAL MEETING OF THE NATIONAL ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY EMPLOYEES.

The second annual convention of the National Association of B. A. I. employees will be held in Denver, Colorado, August 10, 1914, where it is hoped that there will be a large and representative attendance, as the various branches have elected delegates and alternate delegates, there being many important questions to be considered. The meeting last year was in Chicago,

and this year they thought to go a little further west, and made the very excellent selection of the city of Denver. Secretary Walkley, on being asked whether he did not think New York would be an excellent place to suggest for their 1915 meeting, said: "When I left Milwaukee for Washington I thought that the place I would suggest for the next meeting of our association would be in the land of beer and the home of the Deutch, but I now feel that that is too far from the 'Great White Way,' and I would like to see our boys meet right here in New York in 1915."

And Dr. Walkley's change of view from his home city to New York is a step in the right direction, and we hope that he will be able to convince his colleagues the same way before the adjournment of the Denver meeting. New York City in itself is, of course, sufficiently attractive from an educational standpoint, in a *general* way (to say nothing of the entertainment it offers), but what the association will want to consider in selecting a place is, are there any *special* educational advantages to be found in New York? Bureau men will be in position to answer that question better than any one else. Will it be advantageous to them to witness special methods of inspection which they, as B. A. I. men know whether or not New York has to offer? Would the inspection of imported meats at the piers interest them? Or the inspection of Kosher cattle, which is done in New York, we understand, on Sunday? We believe these inspections would prove both interesting and instructive, and hundreds of other particular methods of inspection peculiar to New York City. Besides such a selection is now due the eastern members. We offer our many friends in the B. A. I. service the pages of the REVIEW upon which to ply their arguments, if the matter is not settled at the Denver meeting, and will promise an array of arguments ourselves that will convince the most skeptical that *New York City is the logical place for the Third Annual Meeting of the National Association of Bureau of Animal Industry Employees.*

ORIGINAL ARTICLES.

SOME MECHANICAL FACTORS IN DIGESTION.

By Septimus Sisson, S.B., V.S., Professor of Comparative Anatomy, Ohio State University.

(Continued from July.)

The effect of watering on the stomach contents and the transport of water through the stomach and small intestine are important in regard to dietics, and conflicting views have been expressed in this connection. Smith (loc. cit., p. 181) states that "the regular arrangement of food in layers is disturbed when a horse is watered after feeding; half the food may in this way be washed out of the stomach, for the water which a horse drinks does not stop in the stomach, but passes directly through it on its way to the caecum. Hence we have the golden rule of experience that horses should be watered first and fed afterwards." Colin(25) concluded from his observations that in some cases the water passed from cardia to pylorus along the lesser curvature without disturbing or diluting the contents of the stomach, while in other cases it mixed with the ingesta, which it reduced to a soup-like consistence and washed into the intestine. It is self-evident that when a horse which has eaten an ordinary feed drinks any considerable amount of water, both cannot be accommodated in the stomach. As previously stated, Cohnheim observed that in the dog, when the stomach is full, water will pass from cardia to pylorus along the lesser curvature without material effect on the gastric contents. A like process has been observed in man. Investigations were recently made by Scheunert and Schattke (loc. cit.) to determine the results

on the stomach contents of watering and also the transit of water through the intestine. The water was colored with malachite green, so that its distribution could be noted. Observations were also made of the variations of the water content of the ingesta in the stomach, the chemical phenomena of digestion, and the arrangement of the various parts of the rations in the stomach. The conclusions reached by these observers were as follows: 1, That the drinking of water in any amount desired by the animal exerted no deleterious effect on digestion. 2, That the increase in the water content of the ingesta was inconsiderable, reaching at most 10 per cent. above the normal average; a similar increase can be produced by the large amount of saliva secreted during mastication of hay or by exercise. The interval before return to the usual lower water content varies individually; in one case it was only ten minutes in duration, but in general appears to be one or two hours. 3, The bulk of the water leaves the stomach quickly. When the stomach is well filled, the contents are only penetrated very superficially by the water. In the left extremity very little or no staining of the ingesta took place. The water appeared to go first to the central part of the stomach, *i. e.*, ventral to the cardia, as one would naturally expect, and passed to the pylorus chiefly along each side and along the greater curvature. Only in cases in which the stomach contained little food was the latter stained throughout, showing complete penetration of the water. It would appear that fluid would be prevented from passing directly from cardia to pylorus along the lesser curvature (Magenstrasse of Waldeyer) by the large ridge produced by the folding here of the wall of the stomach.

The view is prevalent that water passes rapidly through the small intestine of the horse and thus quickly reaches the caecum; the latter being regarded as a reservoir for fluid. Ellenberger(26) states that "in the horse water passes very quickly, not only through the stomach, but also through the small intestine, and may have arrived in part in the caecum in a few minutes. Colin has expressed a similar view. F. Smith (loc. cit., p. 213) states that "experiment show that water will pass from the

stomach to the caecum in from five to fifteen minutes. By applying the ear over the duodenum, as it passes under the last rib on the right side, the water which a horse at that moment is drinking may be heard rushing through the intestines on its way to the caecum." It is quite true that auscultation as indicated will reveal the passage of fluid in the duodenum, but this furnishes no information as to what takes place in the remaining seventy feet of the small intestine. The numerous observations of Scheunert and Schattke do not support this view. They found that in cases in which a considerable amount (9-12 liters) of water was drunk, the bulk of it passed into the small intestine in a short time, but that a period of three-quarters of an hour to an hour elapsed before any reached the caecum. This period does not appear to be influenced by the amount of water taken, but the rapidity of distribution in the small intestine, as might be expected, is in direct proportion to the quantity drunk. It seems that here absorption quickly reduces the amount of water in the bowel and thus prevents interference with digestion and the premature transport of material into the large intestine.

The mechanism of the compound stomach of the ox offers many problems which are yet unsolved. Most of the statements current in regard to it are not based on experimental evidence, but are more or less plausible inferences drawn from anatomical facts. Even so elementary a matter as the question into which part of the stomach ingesta enter has been variously answered. It seems to be quite commonly believed that fluid and finely divided food pass from the cardia to the omasum by way of the so-called oesophageal groove. Doubtless this was originally a pure assumption, and it assuredly is not supported by experimental evidence or anatomical arrangement. Vrybürg(27) gave cattle 2-3 liters of water colored with fuchsin, which was administered by means of an irrigator, the head being about horizontal. He found that in three of these (adults) which were killed immediately there was no colored fluid in the omasum or abomasum. Three others were slaughtered at the end of 7, 8 and 10 hours, respectively; in the first a little colored fluid had reached the

first part of the omasum; in the second the ventral part of the omasum and a portion of the abomasum were stained; while in the third part of the fluid had reached the duodenum. In the case of an ox which had drunk voluntarily and was killed half an hour afterward a small part of the omasum was stained. The same was true of a calf eight months old. Vrybürg concluded that all or almost all of the fluid swallowed by cattle passes into the rumen; this view is in conformity with our present knowledge of the internal topography of the bovine stomach. Craig(28) administered half a gallon of water deeply colored with fuchsin to three cattle; in two cases it was given with a drenching horn and in the third through a probang. A two-year-old bullock was allowed to drink a bucketful of water and was then drenched with two quarts of water colored with magenta. A goat was drenched with half a pint of water similarly colored; during administration the animal was placed on its haunches and the head held back. The animals were killed immediately afterward. Colored fluid was found only in the rumen and reticulum—not a trace of it was present in the omasum or abomasum. The stain had diffused through the contents of the reticulum, but in the rumen it was present only in the solid food near the wall. As Craig states, these results show at least what takes place when medicinal agents are given in drench, *i. e.*, they are diluted in the rumen and reticulum. This explains, for example, the very limited action on parasites in the abomasum or intestine of anthelmintics administered per os. It is to be regretted that these observers do not state whether there was any staining of the oesophageal groove. Colin made several observations on cattle by passing the hand to the cardia through a flank incision. He states that when the animal drank water, the latter passed in great part into the reticulum and then flowed over into the rumen; a very small amount trickled down the oesophageal groove. Evidently the important functional feature here is not the groove, but the thick muscular pillars which constitute the so-called lips of the groove. The contraction of these pillars would shorten that part of the wall of the stomach and

close the reticulo-omasal opening. Under what circumstances this action takes place we do not know, but it would seem that it might occur in regurgitation and in the transfer of ingesta from the reticulum to the rumen. The writer's observations lead him to believe that all ingesta which are swallowed in a natural manner pass through the atrium of the stomach into the anterior part of the dorsal sac of the rumen, and this view is in conformity with the anatomical arrangement.

In cattle the first mastication is brief and consequently such material as grass or hay passes into the rumen in a comparatively rough state. Here it is mixed up with the soft and watery ingesta already present; much of the latter, it is to be noted, has already undergone a second and thorough mastication and insalivation. There appears to be ample ground for the view that the ingesta are moved in all directions and thoroughly mixed up in the rumen. Contraction waves passing along the rumen can be determined by inspection, palpation and auscultation. Direct observations of the movements of the rumen and its contents have been made by Colin and others. Marked shortening of the organ and constriction between the dorsal and ventral sacs are produced by contraction of the powerful muscular pillars. The movement of the contents would be facilitated by the richly papillated character of the greater part of the mucous membrane, which gives the wall of the ventral sac in particular a good "grip" on the contents. The contractions of the rumen average two to three per minute; they are normally stronger and more frequent during feeding and for some time afterward than at other times. They can be readily timed by watching the alternate prominence and flattening of the paralumbar fossa, except when the rumen is distended or the animal is too fat. Descriptions of the sounds produced within the rumen by the movements of its contents, the explosion of gas bubbles, etc., and those caused by the friction between the stomach and the abdominal wall are given in considerable detail in the works of Marck(27), Vogel(28), and Friedberger and Frohner(29). Interesting studies of the action of the ruminant stomach and the effect of

various medicinal agents thereon have been carried on by several workers in Gmeiner's clinic in Giessen. Reference to these researches and further observations are given in a recent article by Haertle(30).

Nothing definite is known in regard to the special functions of the reticulum. Ellenberger observed that this sac is capable of extreme contraction, which occurs with great rapidity, like that of striped muscle.* The entire sac appears to contract at once, so that a contraction-wave is not seen. There are three possible outlets for the reticular contents: they may pass 1, backward into the dorsal sac of the rumen over the rumino-reticular fold; 2, into the omasum, or 3, into the oesophagus. It would seem that in general the first of these directions would be followed, except when the rumen contracts simultaneously, although smaller amounts could pass through the reticulo-omasal orifice if open. Observations indicate that only fluid and ingesta which have undergone very considerable comminution enter the omasum. This would be expected from the relatively small size of the opening and the existence here of peculiar, curved, horny papillae.

Rumination consists of the return of portions of the ingesta from the rumen and reticulum to the mouth, where it undergoes thorough mastication and insalivation, and is again swallowed. The process is repeated at intervals six to eight or even more times during twenty-four hours and occupies about a fourth of the time. It usually begins half or three-quarters of an hour after feeding, but occurs at other times. The external phenomena are readily observed. The animal usually lies down, and assumes a sleepy appearance, with the eyes half closed. Working oxen and camels, however, utilize intervals of rest for the purpose even when not permitted to lie down. The process is under the control of the will in the sense that it may be interrupted by the presence of a strange object or by an unwonted sound, and is resumed when the animal recovers its composure. The mech-

* The longitudinal (striped) fibres of the oesophagus are continued by scattered bundles in the wall of the atrium and especially along the oesophageal groove.

anism of regurgitation is apparently quite simple. The essential factors seem to be: 1, negative pressure in the thoracic part of the oesophagus produced by its relaxation and by the inspiratory phase of the diaphragm; 2, contraction of the rumen and reticulum; 3, contraction of the abdominal muscles. The result is that a portion of the ingesta in the atrium of the stomach is injected forcibly into the oesophagus and carried to the mouth. The rôle of the oesophagus appears to be mainly a passive one, although one may observe a contraction wave pass along the cervical part toward the pharynx. As soon as the mass reaches the mouth, superfluous fluid is squeezed out of it and swallowed Mastication begins at once and continues half a minute to a minute, according to the state of the bolus. The lateral excursion of the mandible is very extensive and the mixture with parotid secretion thorough; it is remarkable that the mandibular glands do not secrete during rumination. The bolus is then swallowed and in three or four seconds another one has reached the mouth. The "cud" weighs about 100-120 gm. During mastication fluid is swallowed at intervals and eructations of gas occur. It is observed that rumination will not take place unless the rumen contains a certain amount of ingesta and fluid. It is also inhibited, on the other hand, by undue distension. In the former case apparently there is not an adequate stimulus for the reflex, and in the other local anemia and stretching of the muscular coat prevent contraction. There is no evidence to support the view that the remasticated bolus when swallowed passes along the oesophageal groove to the omasum. It is, to say the least, highly improbable that such is the case, and in the camel it evidently could not occur.

The process of rumination is sometimes regarded as a sort of physiological vomiting, in which ejection of the bolus is inhibited. While it is true that the two processes have some factors in common, they evidently differ in important particulars. In both the cardia is relaxed and the abdominal muscles contract. But Cannon's observations indicate that in vomiting that rôle of the stomach is relatively passive. He noted that in the

cat, after administration of apomorphine, the left part of the stomach is relaxed and flaccid. Several deep contraction-waves pass from the mid-region to the pyloric vestibule, from which a slight wave continues. A strong contraction at the incisura angularis divides the cavity into two parts. A quick contraction of diaphragm and abdominal muscles ejects part of the contents of the stomach through the relaxed cardia. As the jerky contractions are repeated the stomach seems to close about the remnant of its contents. Assuming that the chief factors in regurgitation in vomiting are relaxation of the cardia and contraction of the diaphragm and abdominal muscles, it is not at all surprising that the horse ordinarily vomits with great difficulty, only when in extremis, and not with complete effectiveness. Indeed it is remarkable that the phenomenon occurs at all in this species when one takes into consideration the peculiar powerful cardiac sphincter, the great thickness of the muscular coat and the small potential lumen of the terminal part of the oesophagus, and the small size of the stomach. The latter is separated from the abdominal wall (normally), except that a comparatively small part is in contact with the diaphragm. Furthermore, contraction of the diaphragm would undoubtedly constrict the terminal part of the oesophagus in the hiatus oesophageus, the edges of which are thick and muscular. In addition to all this, egress of ingesta through the cardia is prevented ordinarily by folds of mucous membrane, and it would appear that the cardia would need to be considerably dilated to overcome this impediment. In the dog, cat and pig the situation is very different; the terminal part of the oesophagus is thin-walled and has a large potential lumen, the cardia is very dilatable, and the stomach is relatively large and has extensive contact with the abdominal wall when it is well filled. The ease and effectiveness with which such animals vomit is readily understood. In this connection the observations of Cannon(31) with regard to the movements of particles of food in the stomach when the gastric contents were largely fluid are interesting. He noted repeated regurgitations into the oesophagus; fluid passed quickly as far as the heart-level or the

root of the neck, but was returned to the stomach at once by a peristaltic wave. This action recurred periodically for twenty or thirty minutes; it gradually became less frequent and subsided (in the cat) after a rate of one per minute was reached. Fluidity is a prime factor in the phenomenon. Vomiting is not frequently observed in cattle, and is not performed so readily as in the dog or pig, but in some cases they eject through the mouth a large quantity (even more than ten liters according to Marek) of the more fluid contents of the rumen and reticulum. In the horse the vomited material is ejected chiefly from the nostrils, and not uncommonly pneumonia results from the aspiration of some of the ingesta. It is doubtless true that the ease with which vomiting is initiated in some animals as compared with others is due to the threshold of stimulation of the vomiting centre being lower in the former.

In the omasum food which is not already in a finely divided or largely fluid state is thoroughly triturated. This is accomplished by the ingesta being pressed into thin layers between the laminae and rasped by the numerous horny papillae which stud the surface of these folds. The contractions of the omasum are slow and powerful; the amount of muscular tissue involved in its action is seen to be very great when we include in our estimate —as we must—the muscular strata of the laminae. The pressure exerted on the ingesta naturally squeezes out a large part of the fluid, which runs down into the omasal groove and so into the abomasum. The water-content of some of the food in the omasum has been found as low as 50 per cent. in apparently normal cases. It is clear that in any case in which the usual procession of ingesta through the stomach is interrupted or appreciably retarded, the omasal contents will undergo continued dessication, and further that the latter process would be even more rapid if contraction of the omasum is not inhibited. It is not at all easy to understand how the food reaches the upper part of the omasum. F. Smith (loc. cit., p. 197) says that "the omasum defies the laws of gravity," but gives an ingenious account of the mechanism. The writer has found no description which appears

to be based on actual observation of the process. Certain considerations diminish the difficulty of comprehending the action of this curious organ. Its long axis is not horizontal; the anterior end is considerably higher than the posterior. Most of the laminae are oblique, not vertical, and they are so thickly beset with horny papillae as to give them a firm hold on the ingesta. The circular muscular coat is thick and forms a strong pillar at the anterior margin of the omaso-abomasal orifice. The free edges of the laminae are thick; this is due to an increased amount of muscular tissue here. At the neck the laminae have the form of thick muscular ridges. They reach their greatest height in the middle part and diminish gradually in extent toward the abomasal orifice.

No mechanical features of special interest are known in regard to the abomasum. There is no sphincter at the omaso-abomasal orifice. The writer has always found the opening patent in formalin-hardened subjects. But observations show that no coarse food finds its way into the abomasum, and foreign bodies are rarely found there.

Limitation of space permits very brief reference to the intestinal mechanism. The movements of the small intestine are of two kinds—peristaltic waves and rhythmic contractions. The peristaltic waves may take the form of *a*, a slowly advancing contraction moving a short distance, or *b*, a rapid contraction passing along a much greater distance. The former action moves a mass of ingesta a little further along. The latter, the "peristaltic rush" of Meltzer and Auer(32), empties the part of the bowel involved. The second kind of movement, rhythmic contraction, is by far the most common and most interesting mechanical process, according to Cannon(33), who first described it. The process as observed in the dog and cat by means of X-rays is briefly as follows: The ingesta in a certain length of the bowel are divided by contractions into series of fairly uniform segments. A moment later each of these segments is subdivided, and promptly after this division adjacent masses "rush together" and form new segments. This process was seen to

continue for more than half an hour without the food moving along any considerable distance. It has been happily termed "rhythmic segmentation" by Cannon. Variations are observed; thus if the food mass is thick, the division may be incomplete and the segments relatively long. The constrictions also occur near the ends of segments. Secondary division may occur without previous union of primary segments. The rate when the food "string" was thin was 12-22 per minute in the dog, 20-30 in the cat. Hertz(34) found the rate in man to be 7 per minute. The effects of the process are: 1, Food is repeatedly brought in close contact with different parts of the bowel wall; 2, undigested food is thoroughly mixed with digestive fluids; 3, digested matter is thoroughly exposed to the mucous membrane for absorption; 4, the repeated contractions facilitate the flow of blood and lymph. The process was not seen in the rabbit, in which there was instead rhythmic moving to and fro of a mass, rapidly repeated for a considerable period. This observation raises the question whether rhythmic segmentation occurs at all in typical herbivora, such as the horse and ox. Ellenberger (loc. cit., p. 292) recognizes two forms of movement of the small intestine —peristalsis and pendulum movements. The latter correspond to the action noted above in the rabbit, and persist for a considerable time in a stretch of the bowel before the contents are moved on by peristalsis. Cannon did not observe delay in the passage of food through the small intestine, except under experimentally disturbing conditions, *e. g.,* irritation of the colon. Hertz in his observations on man noted retardation only in lead poisoning. This is in accordance with clinical observations that stasis in the small intestine is usually due to mechanical obstruction, whereas in the large intestine it is often primary.

Most of the definite information which we have in regard to the action of the large intestine relates to the dog, cat and man. In 1890 Jacobi observed antiperistalsis in the colon of the cat. Cannon(35) studied the movements of the large intestine of the dog and cat by means of the X-rays. He observed that as soon as a mass of ingesta passed from the ileum into the colon,

a strong contraction passed along the caecum and first part of the colon and carried some of the contents onward. A moment later a strong antiperistaltic wave passed along the right part of the colon and continued till the caecum was filled. The contents of the colon are not normally forced back into the small intestine. The ileo-colic valve appears to be competent, except when a large amount of fluid is introduced into the colon, when regurgitation may occur. This agrees with clinical observations. The action of the first part of the colon is thus like that of the stomach when the pylorus is closed. The contents are forced backward through the advancing constricted ring, and are thus thoroughly mixed and brought into intimate contact with the intestinal mucosa. Later, as the contents accumulate and extend along the colon, a deep, ring-like contraction occurs near the advancing end of the ingesta and almost separates a portion from the main mass. The ring moves along slowly, carrying the portion of ingesta before it. This process is repeated, and the separated masses are carried along by peristalsis. Elliot and Barclay-Smith(36) found in the herbivora which they studied that there was churning movement in the sacculated part of the colon. Each saccule was at times the seat of swaying oscillations, and the degree of sacculation was in proportion to the activity of the churning movement. Little definite information is available with regard to the mechanical action of the caecum and colon in the larger domestic animals. In the ox, sheep and pig the division between these two parts of the bowel is purely conventional, and it is at least probable that there is here antiperistaltic action as in the dog and cat. In the horse the arrangement is quite different. The connection between the caecum and colon is a narrow neck, so that the caecum is a true cul-de-sac with two blind ends. It seems improbable, but by no means impossible, that reflex occurs of contents of the colon into the caecum. The form of the caeco-colic orifice varies in material hardened in situ. In many cases it is slit-like, but not tightly closed; in others it has a narrow oval form, with a long diameter of about 5 cm. and a width of about 2 cm.; in others it is round

and small, but usually easily passable by the finger. When the orifice is found rather widely open, the approach to it from the caecum is funnel-like. The first part of the colon which succeeds the neck of actual origin usually has the form of a sacculation, the convexity of which is dorsal; Schmaltz(37) recently proposed for it the term "vestibulum coli." This vestibule communicates with the larger part of the colon by a constriction which may be orbicular or have a length of 10 to 12 cm. These peculiar features may throw some light on the occasional failure of puncture of the bowel to result in effective removal of gas. There does not appear to be any ground for the suggestion which has been made that material may pass practically directly from the ileum to the colon in the horse (F. Smith, loc. cit., p. 215). The position of the caecal orifices has been misapprehended. The opening into the colon is about 5 cm. lateral to (*i. e.*, to the right of) the ileo-caecal orifice and is usually at a slightly lower level. A large shelf-like fold intervenes between the two, and overlies the approach to the caeco-colic opening. The arrangement can be seen satisfactorily only on frozen preparations or on material which has been well-hardened in situ. It would seem that material issuing from the ileo-caecal orifice could pass either downward into the body or forward and downward into the anterior part of the base of the caecum. From the latter it could be carried readily into the colon, but material which has passed into the body and apex of the caecum would have to be brought up to the base before it could enter the colon. It would seem essential for this action—as in the case of the rumen with respect to regurgitation—that the caecum be well filled and that plenty of fluid be present. Clinical experience supports this view of the situation. Comprehension of the mechanism is not facilitated by the fact that the longitudinal bands are largely composed of elastic tissue. Smith expresses the opinion that material does not remain long in the caecum, but Ellenberger says ingesta remain in it 18 to 24 hours, and that there occurs here a mixture of remnants of several feeds.

Oscillating pendulum movements probably occur in the sac-

culated ventral parts of the colon as well as peristalsis, but probably only the latter action in the remainder of the bowel. The peculiar arrangement of the terminal part of the great colon favors the occurrence of stasis here. The contents must be moved upward and to the left from the enormous colic ampulla into the narrow funnel-like connection with the small colon, which might be termed the infundibulum coli.

The nervous mechanism of the gastro-intestinal tract and other interesting topics must be excluded from consideration in a short paper dealing only with certain phases of the mechanics of the digestive apparatus.

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A Full Report of the International Veterinary Congress in London Will Appear in the September Issue of the Review.—A complete and accurate report of the London Congress, from a representative of the Review staff on the ground, will be published in our September issue, that our readers may be in possession, at the earliest possible date, of the happenings in London that affect veterinary science throughout the world.

Will Appear in the September Issue.—The advantages of a Sanitary Milk House on the Farm, by Dr. C. R. Potteiger, assistant food inspector of Reading, Pa.

SOME RESULTS OF BLOOD COUNTING ON CATTLE.

By Arthur B. Clawson, Physiologist, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.

In the spring of 1909, the Office of Poisonous Plant Investigations had at Limon, Colorado (altitude 5,360 feet) a number of cattle, some of which were to be taken during the summer to Mount Carbon, Colorado (altitude about 9,000 feet). Of these there were 13 belonging to the State of Colorado, and 14 belonging to the Department of Agriculture. Inasmuch as some counts which had been made on the blood of these and other animals while at the Experiment Station at Hugo, Colorado (altitude about 5,000 feet), during the preceding four years in connection with other work had indicated that a study of the effect of altitude on the blood of cattle would give some interesting results, it was suggested by Dr. C. Dwight Marsh, who has general charge of the poisonous plant work, that it would be well to take advantage of this opportunity to make some comparative counts. So far as can be learned, little work of this kind has ever been done on cattle, though considerable has been done on human beings.

The cattle had been kept during the preceding winter on the ranch of W. S. Pershing, at Limon. Previous to that they had been used for experimental purposes at the station at Hugo. Some of them had been in the possession of the station for four years, and their histories kept. Some had been owned by the station only since the preceding July, and others had been born there. When first seen in the spring of 1909 (May 22) they were all in good physical condition, and had come through the winter in good shape.

The ages of these cattle varied from less than one to eight years or more at the time the blood counts in the spring of 1909 were made. Some of them had been in good condition for the last year preceding this time, while others had been locoed. At the time the counts were made at Limon only one showed any effects from having been locoed. That was Number 68, a young bull.

Table I gives in tabular form the results of all of the counts made at both Limon and Mount Carbon. The differential counts were made from slides prepared at the time the other counts were made.

At Limon counts on both the red and white corpuscles of most of the animals were made, and blood smears were prepared. One animal died after being taken to Mount Carbon before the number of blood corpuscles could be determined. The counting was done by C. W. Marsh, H. Pershing, and the author, in such a way as to have the work of one person check off that of another. In every case at least two, and in some cases three or four counts were made. All counting was done by means of the Thoma Zeiss diluting pipettes and slides with the Turk ruling. For the red corpuscles Hayem's diluting fluid was used, and dilutions of 1-200 made. For the white corpuscles Toison's fluid was used and dilutions of 1-20 made. With this dilution for the whites there were cases where the lines of the slide were somewhat obscure and difficult to follow, but generally they could be made out with considerable ease.

In counting the red corpuscles, 100 of the small squares were counted, taking them so as to sample the whole field. With the white corpuscles the whole ruled field was counted; viz.: 144 of the large squares. The average of all of the counts made on an animal at one time was taken as the number of the corpuscles, red or white as the case might be, all possible care being taken to avoid error.

At Limon, the counts were made between May 24 and June 9, 1909, by the above mentioned three persons. At Mount Carbon the counts were made during the summer by C. W. Marsh and the writer.

TABLE I.

Showing Blood Counts on Cattle, 1909—Numbers Are Averages.

NUMBER OF ANIMAL.	PLACE.	DATE.	AGE.	NUMBER OF RED CORPUSCLES.	NUMBER OF WHITE CORPUSCLES.	DIFFERENTIAL COUNT OF WHITE CORPUSCLES.									
						Lymphocytes.		Polymorphonuclears.		Eosinophiles.		Large Mononuclears.		Mast Cells.	
						Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.
1	Limon, Colo.	June 3	8 + (?)	6,472,000	3,465										
4	Limon, Colo.	June 4	8 +	8,285,300	2,134										
6	Limon, Colo.	June 4	7 +	8,126,400	5,187										
30	Limon, Colo.	June 1	Old	7,088,000	1,567	67.4	1,057	30.8	482	1.3	21	0.2	3	0.2	3
35	Limon, Colo.	May 31	Old	7,104,000	4,177	58.6	2,449	36.0	1,505	4.5	189	0.15	8	.6	26
41	Limon, Colo.	June 5	7+	8,256,000											
68	Limon, Colo.	June 3	3	6,272,000	5,400										
82	Limon, Colo.	June 3	7 +		2,866	32.4	929	44.0	1,261	20.0	574	2.4	69	1.2	33
84	Limon, Colo.	May 30	6 +	7,156,000	2,944										
88	Limon, Colo.	May 24	Old	8,796,000	4,843										
91	Limon, Colo.	June 3	7 +	6,911,200	4,944										
92	Limon, Colo.	May 30	8 +	6,850,000	3,700	80.5	2,981	11.2	416	7.8	291	0.3	12		
97	Limon, Colo.	June 3	Yearling	9,632,000											
97	Limon, Colo.	May 28	Yearling		8,206										
97	Limon, Colo.	June 6	Yearling		4,442										
98	Limon, Colo.	May 26	Yearing	8,637,300	7,645	57.1	4,368	40.5	3,099	1.0	77	1.0	77	0.3	24
107	Limon, Colo.	May 26	Yearling	10,709,300	9,467	72.8	6,911	20.3	1,932	5.3	511	0.8	85	0.3	28
107	Limon, Colo.	June 2	Yearling		6,442										
107	Limon, Colo.	June 6	Yearling	10,696,000											
108	Limon, Colo.	May 25	Yearling	9,287,000	6,022	74.2	4,469	19.0	1,144	6.9	361	0.4	24	0.4	24
112	Limon, Colo.	May 28	3	11,802,000											
112	Limon, Colo.	June 3	3		6,221										
113	Limon, Colo.	May 28	3	8,626,000											
113	Limon, Colo.	June 2	3		5,709										
115	Limon, Colo.	May 29	3	8,371,000	5,376	77.9	4,188	16.8	903	5.1	274			0.2	11
117	Limon, Colo.	May 29	3	9,100,000	6,409	79.0	5,063	18.0	954	3.0	192				
82	Mount Carbon, Colo.	July 6	7 +	8,400,000											
82	Mount Carbon, Colo.	Aug. 21	7	7,608,000											
82	Mount Carbon, Colo.	Sept. 17	7	10,568,000											
84	Mount Carbon, Colo.	Aug. 11	6 +	8,845,300											
88	Mount Carbon, Colo.	July 5	Old	7,548,000	6,243										
91	Mount Carbon, Colo.	July 5	7 +	8,836,000	5,066										
92	Mount Carbon, Colo.	June 22	8 +	11,432,000											
92	Mount Carbon, Colo.	Sept. 17	8 +	7,893,000											
98	Mount Carbon, Colo.	Aug. 26	Yearling	11,064,000											
107	Mount Carbon, Colo.	Aug. 2	Yearling	8,005,300											
108	Mount Carbon, Colo.	Aug. 2	Yearline	8,800,000											
108	Mount Carbon, Colo.	Sept. 24	Yearling	7,784,000											
112	Mount Carbon, Colo.	Aug. 19	3	8,080,000	15,972										
113	Mount Carbon, Colo.	July 31	3	8,760,000	1,733										
115	Mount Carbon, Colo.	June 26	3	10,904,000											
117	Mount Carbon, Colo.	Aug. 3	3	8,702,000											

Influence of Age on the Number of Red Corpuscles.—It is commonly stated that in human beings the number of red corpuscles is highest in childhood decreases to the time of puberty and decreases in old age.

TABLE II.

Effects of Age on the Number of Red Corpuscles.

No. of Animal.	Under 5 Years of Age.	Over 5 Years of Age.
1		6,472,000
4		8,285,000
6		8,126,000
30		7,088,000
31		7,104,000
41		8,256,000
84		7,156,000
88		8,796,000
91		6,911,000
92		6,850,000
68	6,272,000	
98	8,637,000	
107	10,706,000	
108	9,287,000	
97	9,632,000	
112	11,802,000	
113	8,626,000	
115	8,371,000	
117	9,100,000	
Average	9,159,222	7,504,400

Some of the animals at Limon were rather old, others again were quite young. To test the effect of age, Table II was made. In this the counts on animals made at Limon have been divided into two groups. In one column are placed the counts on all of the

animals under five years of age. As a matter of fact all of them were under four and some of them were less than a year old. In the other column are the counts of red corpuscles of the animals over five years of age at the time the count was made. Their average age was probably eight or more years. There are in this table 9 animals under five and 10 over five years of age. A glance at the table will show a certain amount of uniformity in the counts. Those in column II are in all cases under 9,000,000, most of them considerably under. Those in column I are uniformly higher and with one exception run considerably above eight million. This one exception is that of bull 68, which was locoed the two preceding summers. In spite of this low count, the average of the counts in column I is 9,159,222, while that for the older animals in column II is 7,504,400. Here is a difference of 1,654,822 in favor of the younger group of animals. Based on the average number of red corpuscles of the younger animals this is a difference of 18 per cent.

Effect of Altitude on the Red Corpuscles.

It is generally conceded that there is a correlation between altitude and the number of red corpuscles, the greater the altitude the larger the number of the corpuscles. Considerable work has been done on the effect of altitude on human blood and some on animals, especially the dog. Most of the results agree fairly well.

The counts of red corpuscles made at Limon ran considerably higher than those usually given for cattle, which were presumably made at lower altitudes. The number of red corpuscles in normal cattle is usually placed at about 6 millions. The results of different investigators vary from 4.2 millions, found by Malassey to 6,847,000 by Storch. To be sure, Storch found greater numbers than this in calves and young cattle. This number is an average of all of his findings.* The average for all counts made at Limon is 8,288,263, or nearly two millions higher than the average count in literature.

* Burnett "Clinical Pathology of the Blood of Animals," 1908, p. 43.

Of the cattle wintered at Limon, 14 were taken in the spring to Mount Carbon, arriving there on June 14th. On 11 of these, counts of the red corpuscles were made at both places. As previously stated, at Limon, all of the counts were made between May 25th and June 8th, while at Mount Carbon the counting was distributed over the rest of the summer, much of it being done in August. The time of the year when the counts were made may be an important factor.

TABLE III.

Blood Count, Limon and Mount Carbon, Colorado. Red Corpuscles, 1909.

No.	Limon.	Mount Carbon.
84	7,156,000	8,845,333
88	8,796,000	7,548,000
91	6,911,000	8,836,000
92	6,850,000	8,778,000
98	8,637,000	11,064,000
107	10,706,000	8,005,333
108	9,287,600	8,292,000
112	11,802,000	8,080,000
113	8,626,666	8,760,000
115	8,371,000	10,904,000
117	9,100,000	8,702,000
Average	8,749,388	9,255,878

The counts made at these two places are compared in Table III. Animals which were not examined in both places are not considered in this table. There were two counts at Limon that ran high, likewise two at Mount Carbon that ran high. These were young, vigorous animals. These high counts can not influence the results materially as they will largely balance each other, there being two in each column.

The average of the counts made at Limon (altitude 5,360 feet) is 8,749,388 red corpuscles, and at Mount Carbon (altitude, 9,000 feet) 9,255,490. This gives a difference of 506,400 in favor of the higher altitude, or an increase of 5.8 per cent., an increase considerably less than that reported by workers on human and dog's blood—see Table IV. In this table we have

TABLE IV.

Effect of Altitude on Number of Red Corpuscles.

Author	Subject.	Difference in Elevation, Meters.	Increase in Blood Corpuscles in Percent.	Increase per 100 Meters Elevation in Percent.	Time at Higher Elevation.
Viault.....	Man...	4,392	60.0	1.4	On arriving
Egger.....	Man...	1,800	16.0	.9	4½ weeks
Egger.....	Dogs...	1,800	27.4	1.5	
Egger.....	Dogs...	1,800	6.0	.33	9 days
Raemisch.....	Man...	1,684	26.0	1.5	Acclimatized,
Karcher.....	Man...	789	9.3	1.2	20 days
Sutter.....	Man...	719	14.0	2.0	
Sutter.....	Dogs...	719	24.7	3.5	
Veillon.....	Dogs...	434	5.4	1.3	4 days
Veillon and Sutter.....	Man...	434	6.4	1.8	

computed the findings in terms of 100 meters elevation. A glance at the table will show that there is a considerable variation in the results. There is also a variation in the length of time the individuals had been at the higher altitude when the counts were made. With one exception, however, the findings are higher than those here reported. For individuals which had been at the higher elevation any length of time, the table shows an increase varying from .9 per cent. to 3.5 per cent. per 100 m. elevation. Our counts show only .44 per cent. for the same increase in altitude.

There is one other factor that probably should be taken into account here, that is, the time of the year when the counts were made. Smith and Kilborn, in Bulletin 1 of the Bureau of Animal Industry, U. S. Department of Agriculture, p. 38, state that

around the District of Columbia about seven million corpuscles in winter and five million in late summer or early autumn would be a fair average. Others have stated that there are more corpuscles in late winter and spring than in late summer and early fall. If this is true, we have a possible explanation for this seeming discrepancy. The counts made at Limon were under spring conditions, while those made at Mount Carbon were under summer conditions.

TABLE V.

Blood Count. Early vs. Late Summer. Counted at Mt. Carbon, Colorado.

No.	June and July.	August and September.
82	8,400,000	8,200,000
84		8,845,000
88	7,548,000	
91	8,836,000	
92	11,432,000	7,893,000
98		11,064,000
107		8,005,000
108		8,292,000
112		8,080,000
113	8,760,000	
115	10,904,000	
117		8,702,000
Average	9,313,000	8,635,000

An attempt was made to test this possible factor in the counts made at Mount Carbon. Some of the counts were made in June, others in July, August and September. The largest number was made in August. In Table V the counts are separated into two groups. Column I gives the counts made in the first half of the

summer, or in June and July. Column II gives the results of the counts made in August and September. Taking the average of these two columns there is obtained 9,313,000 for the first half of the summer, and 8,635,000 for the latter half. Here is a difference of 678,000 in favor of the first half of the summer. That this difference is not due to a larger percentage of young animals in the first column is shown by the fact that of the young animals only two are included in the first column while there are five in the second column. Of the old animals, there are on the other hand more included in the first than the second column.

TABLE VI.

Blood Count Throughout Summer at Mt. Carbon.

No.	June.	July.	August.	September.
82.....		8,400,000	7,608,000	10,568,000
84.....			8,845,000	
88.....		7,548,000		
91.....		8,836,000		
92.....	11,432,000		11,064,000	7,893,000
107.....			8,005,000	
108.....			8,800,000	7,784,000
112.....			8,080,000	
113.....		8,760,000		
115.....	10,904,000			
117.....			8,702,000	
Average.	11,168,000	8,386,000	8,729,142	8,748,000

Taking the same figures and dividing them by months, the result as shown in Table VI is obtained, and the highest count is in the month of June. As there are only two animals included in the counts of this month, too much stress should not be laid on this result. For the other three months there is no evidence of a progressive change. All that can be said is that the evidence, so far as it goes, points towards a larger number of red corpuscles

in the spring than in the middle or late summer. If such is the case, then the effect of altitude is much greater than would appear in Table III. In considering Tables V and VI, it must also be remembered that the animals had just been brought from a much lower altitude and perhaps were not yet acclimated when the June counts were made.

Summary.

1. In the older animals there was a decidedly smaller number of red corpuscles than in the younger. There was an average of 9,159,222 in the younger and 7,504,000 in the older group, or a difference of 1,654,822.

2. The animals when taken from an altitude of 5,360 feet to an altitude of 9,000 feet showed an increase in the number of red corpuscles. The average number was 8,749,388 at 5,360 feet, and 9,225,878 at 9,000 feet, the difference being 506,492. The counts at the lower elevation were made in early summer, while those at the higher altitude were made largely in midsummer. Had the counts at the two altitudes been made at more nearly the same time the difference might have been greater.

3. The counts at Mount Carbon show a larger number of red corpuscles in early than middle or late summer.

Number of Horses and Mules Still Increasing in U. S.—The estimates for January 1, 1914, indicate that there are 20,955,000 horses and 4,447,000 mules on farms in the United States, an average annual increase of about 1.4 per cent. over the number shown by the census of 1910. It is estimated that the average farm price of horses has increased from $108.19 in the census year to $109.33 in January, 1914, and in the case of mules from $119.84 to $123.84 in the same period. On this basis the total farm value of horses is $2,291,000,000 and of mules $550,697,000. The total estimated farm value of these animals is therefore $2,841,697,000, which is an increase of $191,454,000 over the census year and represents an annual increase of wealth from these sources of $47,863,000.

BOVINE TUBERCULOSIS.*

By E. C. Schroeder, M.D.V., Superintendent of the Experiment Station of the U. S. Bureau of Animal Industry, Bethesda, Md.

I am here to-day to talk to you about tuberculosis in the place of a man from Washington, from whom you expected an address on hog cholera. This is a twofold substitution. I realize the conditions, and hope, after I have concluded, you will not have a double reason to feel disappointed.

So much attention has been given in recent years to the subject of my paper that it almost may be said to have been worn threadbare, but I believe you can listen to me with patience if you will bear in mind that bovine tuberculosis, with the possible but by no means proved exceptions of cholera among hogs and infectious abortion among cattle, remains to-day the commonest and most expensive evil with which our animal industry is afflicted, and that, apart from the success some of us may have had in cleaning individual herds and small areas where cattle are not numerous, our efforts to control and eradicate the disease have made no material impression on its wide dissemination and frequency.

The phase of the subject I specially wish to talk about is eradication viewed as a purely economic problem. As a condition affecting the public health, the claim seemingly is no longer tenable that the occurrence of tuberculosis among food animals is urgently important, not because bovine tubercle bacilli are harmless for human bodies, but because we have learned how to protect human health against exposure to them. Meat products from tuberculous animals, even before our meat inspection activities began, probably never were a serious menace to human health in this country where most meat is cooked before it is eaten, and milk from tuberculous cows can be made safe by pasteurizing it, and pasteurization is so urgently needed to check other

* Presented to the Massachusetts Veterinary Medical Association at Boston, February, 1914.

and greater raw-milk dangers than those chargeable to the contamination of milk with tubercle bacilli that the efficiently supervised pasteurization of all milk should be universally demanded.

If I were asked to choose between the properly pasteurized milk of tuberculous cows and the best raw milk distributed by city dairies, for my own use or for use in my family, I would select the former, because I know from hundreds of personally conducted tests that pasteurization at 140 degrees F., for 20 minutes, makes the milk of cows affected with udder tuberculosis innocuous for guinea pigs that are exposed to it through intra-abdominal inoculation.

The efforts that have been made to control and eradicate tuberculosis among cattle may be summarized as follows: Tuberculin testing and the slaughter of reacting animals; the Bang method; the Ostertag method; immunization or bovo-vaccination, and the Ujhelyi method.

Tuberculin testing and the slaughter of all reacting cattle in a region where tuberculosis is an uncommon disease may be a hopeful procedure, but to those who know that the best obtainable estimates justify the conclusion that we have over 2,000,000 tuberculous dairy cows in our country, a large proportion of which are only slightly affected and may remain a real source of profit for years to come, and that we have never been less in a position than now to sanction the destruction of cows that are capable of producing healthy calves, it must have the character of a wasteful extravagance that should be adopted only as a last expedient.

Our population has increased rapidly, but the number of our milch cows is no greater now than it was seven years ago, and during the last seven years the number of our other cattle has declined from 51,566,000 to 36,030,000, and is now lower than at any time during the last fourteen years. Coupled with this, as we would naturally expect, the price of cattle, dairy cows included, is higher than ever before.

Furthermore the eradication of tuberculosis among cattle is hopeless without the friendly co-operation of the owners, and

this, I am convinced, cannot be secured by those who advocate the slaughter of every animal that reacts with tuberculin, unless sufficient money can be made available to pay full value for the animals destroyed.

The Bang method requires constant watchfulness and considerable labor, and is open to the objection that calves artificially raised on heated milk, or milk that has undergone modifications of various kinds through its exposure to unnatural conditions, especially such as result from the multiplication of bacteria, do not thrive as well as naturally raised calves. With a series of experiments made with one of my assistants, Dr. Geo. W. Brett, on the relative value of raw, pasteurized and boiled milk as a food for unweaned animals, but in which guinea pigs and not calves were used, I convinced myself that the artificial feeding of unweaned animals constitutes a greater and longer enduring handicap than it is generally recognized to be.

It may be interesting to you to add that the boiled milk in the experiments referred to gave decidedly better results than either the raw or the pasteurized, and that the available data on the use of raw and boiled milk as a food for infants and young animals, when the milk of a foreign species is used, are in favor of boiled milk.

The high price of labor, especially labor guided by trained intelligence, presents economical difficulties that stand in the way of the proper application of the Bang method in our country.

The Ostertag method abandons the tuberculin test for adult cattle. It seeks to control tuberculosis by the removal of physically evident cases of the disease from the herd and the exclusion of recently weaned animals that react with tuberculin. The calves are reared by healthy foster mothers or are artificially fed on sterilized milk. This method may be satisfactory for conditions as they are in Germany, a densely populated country with not less than 40 per cent. of its cattle affected with tuberculosis, and which must use the utmost caution in the adoption of measures that relate to the sources of its food supply; but in the

United States it does not seem to merit serious consideration. The percentage of tuberculosis among our cattle is too low to permit the continued exposure of healthy animals to those that disseminate tubercle bacilli in the absence of sensibly determinable symptoms of disease.

Bovo-vaccination and other attempts to immunize cattle against tuberculosis by injecting them with tubercle bacilli or products of tubercle bacilli have not given results that justify their use, and nothing encouraging has developed in this field since the Federal Bureau of Animal Industry, in 1912, in a report on "The Vaccination of Cattle against Tuberculosis," published the following statements:

"Very careful autopsies of cattle, treated by intravenous inoculations of tubercle bacilli according to the methods of Von Behring and Pearson, show that the more or less attenuated tubercle bacilli that engender immunity against tuberculosis rarely leave the treated subject wholly free from lesions that can be accounted for in any other way than as due to the pathogenic activity within the animal's body of the injected bacilli."*

"The only conclusion to which we are entitled from this work and the careful study of the writings of others on the subject of protective inoculation against tuberculosis may be stated as follows: Though results have been obtained which are very encouraging to the investigator and which prompt him to strive onward with renewed vigor and hope, no system of bovo-vaccination has reached a stage at the present time that justifies its use in common practice." *

We now come to the method of Ujhelyi, in which healthy nurse cows are used for newly born calves when this is practicable, and in which the calves are left with their infected dams until they are weaned when healthy cows are not available and then tested with tuberculin. The reacting calves are slaughtered.

This method is particularly interesting to me because of its resemblance to a method I planned about ten years ago, before I knew of Ujhelyi's interest in the subject, and have given a careful test at the Experiment Station.

* B. A. I. Circular No. 190.

I took three factors into consideration: first, that congenital tuberculosis occurs rarely among calves; second, that the frequency with which young cattle are affected with tuberculosis, even in a tuberculous environment, compared with the frequency of tuberculosis among older cattle, is very low, and, third, that the young of tuberculous cows that have lived in a tuberculous environment until they are weaned, if they fail to react with tuberculin several months after their removal from exposure, provided they are subsequently protected against exposure, remain permanently free from tuberculosis.

I would like to give you precise statistics concerning these three factors, and regret that I am unable to do so. That congenital tuberculosis is extremely uncommon, though seemingly commoner among cattle than persons, requires no lengthy argument. At the Experiment Station, in the course of twenty years, among the numerous calves born of tuberculous cows in all stages of the affection, we have had four cases of true congenital tuberculosis. With one exception the mothers of the congenitally diseased calves were affected with completely generalized tuberculosis that had extended to and attacked their reproductive organs. The one exception was the calf of a cow affected with advanced, generalized tuberculosis without discoverable lesions in her reproductive organs. The examination of many other calves born of tuberculous cows in practically the last stages of tuberculosis, and the inoculation of tissues from such calves into guinea pigs, failed to reveal either tuberculous lesions or the presence of tubercle bacilli.

The available data on the relative frequency of tuberculosis among recently weaned calves and older cattle are meager and contradictory. Abattoir statistics leave us in a quandary about the true meaning of the word calf. Is it an animal that has lived a few weeks or does it include young cattle up to and older than six months? In a general way such statistics show that tuberculosis among animals classed as cattle is from 70 to 80 times as common as among those classed as calves. Hutyra and Marek, in their excellent work on *The Pathology and Therapeutics of*

the Diseases of the Domestic Animals, give statistics, taken from the official report on sanitary police control of abattoirs of the German empire, which show that the proportion of calves condemned on account of tuberculosis is less than a fraction of a per cent., while the proportion of cattle condemned is about 20 per cent., and that the percentage of condemnations among calves is only about half as great as among goats, notwithstanding that, in America, goats are so rarely affected with tuberculosis that many persons believe them to be naturally immune, at any rate against such exposure to tubercle bacilli as they are likely to encounter under economic conditions. Tuberculosis, we must remember, is a disease that may arise from a single, short-lived exposure to infection, but which usually arises from very severe, frequently repeated or long-continued exposure.

At the experiment station we found that about 10 per cent. of the calves produced by tuberculous cows, and kept in an intensely tuberculous environment the first three months of their lives, become infected with tuberculosis. This percentage is undoubtedly much higher than it would be among the calves in ordinary tuberculous herds, because the exposure at the station included, under otherwise far from sanitary conditions, association with cows in the last stages of generalized tuberculosis, some of which were proved by microscopic and inoculation tests to be expelling virulent tubercle bacilli from their mouths, noses, bowels and udders.

It may be well to say here that calves permitted to roam at liberty in a stable or a field with cows, or a single cow, affected with udder tuberculosis, almost invariably become infected, and that actual tests proved that a single feeding from a tuberculous udder, or artificially, from a pail, with milk from a tuberculous udder, is sufficient to cause tuberculosis in the otherwise unexposed calves of healthy mothers.

As to the development of tuberculosis later in life among the progeny of tuberculous cows, or among cattle that failed to react with tuberculin three months after their removal from an

exposure in which they were born and remained until they were weaned, the station has records of more than a hundred such animals that were kept under observation for varying periods of time, some of them more than six years, without a single instance to prove that tubercle bacilli, possibly taken into the body early in life, had remained dormant three months or longer and subsequently caused disease. These animals were intentionally kept under observation to determine whether Von Behring's theory, "that tuberculosis, irrespective of the time of life it reveals itself by symptoms, is commonly due to tubercle bacilli taken into the body during the milk-drinking period," is in any sense true of tuberculosis among cattle.

The fact that Von Behring's theory does not seem to apply to cattle should not be too hastily used as an argument that it has no significance respecting the etiology of human tuberculosis, because the manner in which different species of animals are affected by tubercle bacilli varies enormously, and what may not be true of tuberculosis among cattle may be true, in part at least, about tuberculosis among some other species of animals.

Now, using the three factors I have tried to define, I based an experiment concerning the derivation of a healthy from a tuberculous herd of cattle on them, the plan of which was as follows:

a. Calves born of tuberculous cows or of cows in a tuberculous environment to be left with their mothers about three months.

b. At the end of three months the calves to be moved to an environment free from tubercle bacilli.

c. After the passage of three or four months in a healthy environment, the calves to be tested with tuberculin. If all the young animals exposed to each other failed to react, they were regarded as eligible for introduction into a tuberculosis-free herd. If any one or more of a number of young animals exposed to each other reacted, or it was doubtful whether a tuberculin record should be read as clearly positive or negative, the non-reacting animals were separated from the reacting or doubtful animal or

animals and placed in a second clean environment and tested again, after the lapse of not less than three months, before they were regarded as eligible to enter a healthy herd.

It is questionable whether the second test is really important, because, among over a hundred animals so far handled in accordance with the plan, not one that failed to react with the first test, and was subsequently protected against exposure to tuberculosis, reacted with a second or later tests, and no such animals among the many that were sooner or later examined post mortem showed lesions of tuberculosis.

The cows from which the calves were derived formed two herds, one of which was composed entirely of tuberculous and the other of tuberculous, bovo-vaccinated and healthy cattle. The latter constituted an experiment on the subject of bovo-vaccination, and the infection in it was severe enough to cause the development of tuberculosis among some of the bovo-vaccinated and among twelve of fourteen healthy cattle.

The records of the experiment prove that by following the outlined plan the progeny of an intensely tuberculous herd of cattle can be used to form a healthy, vigorous, profitable herd of young animals, with no great expenditure of labor or money. In the experiment, after the calves were separated from their tuberculous mothers, they were placed in small pastures, and were given no better shelter during winter than small, cheaply constructed stables, into and out of which they could wander at liberty.

The plan does away with the labor and attendant evils of artificial feeding. It may be associated with a somewhat greater percentage of tuberculosis than we have among calves artificially fed on heated milk, but, when we deal with calves produced in herds from which physically evident cases of tuberculosis have been eliminated, cases which should be retained in no herd, the possibly greater losses from tuberculosis will be very small and more than balanced by the greater losses from other causes that are apt to occur among artificially fed, unweaned calves.

In the practical use of the plan I would advise, as the first

step, the removal of all physically evident cases of tuberculosis from the herd, and as a second step the separation of the animals that react with tuberculin from those that do not react, unless it is not intended to make the uninfected portion of the tuberculous the nucleus for the clean herd. In this latter case I would not attempt to distinguish between apparently and actually healthy cattle. In the case it is decided to make the uninfected members of the herd the nucleus of the clean herd, it should be borne in mind that a negative tuberculin test is satisfactory evidence for the absence of tuberculous infection only in animals that have not been exposed to tubercle bacilli for several months.

Tuberculin does not record the presence of tubercle bacilli in the body; it records the presence of changes caused by tubercle bacilli, and an interval of time, the length of which we do not know as precisely as we do the lengths of the periods of incubation of some infectious diseases, elapses between the entrance of tubercle bacilli into the body and the development of tuberculosis. Those who attempt to clean herds without keeping this fact in mind, may find it difficult to explain why their efforts, with the first two or three tuberculin tests too far apart, do not yield satisfactory results.

Following the attention to the original herd, the rest of the plan has been sufficiently defined to require no further description.

This is the method for controlling and eventually eradicating bovine tuberculosis I propose under the existing conditions in our country, and in doing so I recognize, of course, that I am proposing something which is not wholly free from labor and expense. But without a fight we cannot hope to win a battle, and it is worth a great effort to be rid of a preventable disease that reduces the profits from every herd in which it occurs, which may enter any herd it has not yet reached at any time, and which is conservatively estimated to cost the nation considerably more than $20,000,000 per annum, or about double the total estimated farm value of all the dairy cows and other cattle in the State of Massachusetts.

PYO-SEPTICEMIA OF SUCKLINGS.*

By Carl F. Davis, V.M.D., Rumford Falls, Me.

Syn. Pyemic and septic arthritis; joint-ill, navel-ill and limping.

It is an acute, contagious, infectious disease of new-born animals occurring in the first days of life and not later than the first four weeks. Characterized by purulent inflammation of the joints and general pyemic manifestations. It develops as a result of umbilical infection, exceptionally as a result of intrauterine infection of the fœtus.

History. In former times all affections of new-born animals were combined under the term limping or navel-ill, in the course of which lameness and disturbance of walking was present. We can now better differentiate the various diseases and the following are now described in our best text-books: Pyemic or Septic Articular Inflammation, Fatty Degeneration of the Body Muscles, Articular Rheumatism and Muscular Rheumatism, Rickets, Tetanus, Cerebro-Spinal Meningitis, Tabes.

Various other diseases to which sucklings are liable, as intestinal catarrh, broncho-pneumonia, pleuro-pneumonia, general debility, weakness in extensor muscles of the extremities, etc., are also popularly known as limping.

Occurrence of Pyemic Arthritis. The disease occurs principally in sucking colts and sucking calves, less frequently in sucklings of other species. In some of the breeding districts it attains not infrequently an enzootic character. The best opportunity for the spreading of the disease is present in the studs or dairies, where all of the new-born animals may become affected, and as a result the breeding industry is endangered to a great extent.

* Read before the Maine Veterinary Medical Association, at Rockland, July, 1914.

Etiology. The results of various investigations appear to indicate that the disease develops as a result of infection through the umbilicus with various micro-organisms. According to Leraye and Delmer, the organisms implicated are on the one hand the bipolar bacillus of hemorrhagic septicemia and on the other hand a strong virulent variety of the colon bacillus. The latter preparing the way for the pathogenic action of the bipolar bacillus, as the injection of both bacteria under the skin of a calf produces the disease, while the bipolar bacillus alone causes only a local inflammation. In the first case the colon bacillus remains at the point of inoculation, while the bipolar bacillus passes into the blood. Older writers claim that it may be transmitted; although the possibility of this does not seem to have been proven, yet it may easily happen that a certain number of foals may have a predisposition to pyemic polyarthritis, in so far as they are burdened with a low vitality and feeble constitution, which may be transmitted from their mothers. Other authorities have obtained streptococci and staphylococci from organs of affected colts. Whether these bacteria are the original causative factors of the disease or whether they play only a secondary part is not known.

The *natural infection* results mostly through the torn or not yet closed umbilical vessels, immediately after birth or exceptionally during birth.

The stump of the loose, juicy, umbilical cord which is no longer nourished, as well as the blood present on the torn end of the cord, present a suitable medium for the propagation of the micro-organisms, until drying of the stump has taken place. Bacteria which reach the surface of the stump find favorable development in the thrombi inside of the vessels. Then they penetrate along the thrombus, pass the navel ring and finally spread even in the abdominal portion of the umbilical vessels.

The extrauterine infection which causes the disease in the majority of cases occurs through the soiling of the umbilical stump with contaminated straw immediately after birth, as well as by coming in contact with the stable floor containing patho-

genic bacteria or else with the infected hands of the attendants. Infection accumulates in the stable from the excrements of previously affected animals and as a result of this those that are born later are more exposed to infection. In this way the disease which was at first sporadic may later occur with greater frequency.

PATHOGENESIS.—The bacilli which enter the umbilical veins commence to multiply in the coagulated blood of these vessels, on the one hand cause the thrombus to break down and on the other produce an inflammation of the intima and probably also of the external layer of the walls of the vessels. The breaking down of the thrombus progresses gradually inward until it reaches the end, when the infection may come in contact with the liquid blood contained in the same vessel, or in the portal vein, coming in direct contact with the circulating blood. Small particles of the softened thrombus may be carried off by the circulating blood, and with these the bacteria may enter the free blood circulation. They are taken either to the liver or with the blood of the vena cava into the general circulation. Certain organs appear to have a special predisposition for attacks by the micro-organisms circulating in the blood. Of these the lungs and liver should be mentioned first, and in addition metastatic inflammations develop frequently on the synovial membranes of certain joints. In acute cases of the disease the flooding of the blood with pathogenic bacteria, as well as the inflammatory processes which develop at different parts of the body, cause the death of the animal. In some cases the disease process appears to turn toward recovery and the bacteria of hemorrhagic septicemia disappear from the blood, but the toxins have in the meantime exerted a paralytic action on the cells by which the resistance of the animal has been reduced to such an extent that other bacteria, especially the bacillus of pseudo-tuberculosis, may attack the tissues of the body and produce an inflammation of the lung tissue. The disease may turn to a chronic course and these manifestations are often associated with the pre-existing infection.

Anatomical Changes.—In some of the acute cases the umbilicus is swollen and dense. The borders of the umbilical ring are infiltrated or ulcerated, and an incision often reveals an abscess lying on the abdominal wall. The umbilical vein, also one or both umbilical arteries, are greatly thickened, show degeneration of various degrees and often contain blood coagulum or are liquefied to a thick, fetid mass. In case the inflammation has extended to the adjacent peritoneum, the abdominal organs lying close to the affected areas usually show adhesions by fibrinous pseudo-membranes. All these changes may occur without an affection of the umbilicus. Thrombi may also be found in the portal vein, liver, vena cava and aorta. The internal organs present indications of an acute blood infection in the lungs, sometimes showing areas of broncho-pneumonia. Metastatic abscesses occur in many parts of the body, especially the lungs, when they are always associated with a bronchial catarrh; sometimes with a fibrinous or purulent pleurisy. Purulent inflammation is found in the majority of cases in the joints of the extremities, most frequently in the hock and knee joints. All parts of affected joints show various stages of disease and even the bone, tendons and muscles surrounding them may show infiltration, degeneration or abscess formation. (Dr. Meyer.)

In peracute cases the changes are less conspicuous and usually point to general septic infection.

In chronic cases, which are most often seen in calves, the lungs are diseased, and there often exists pericarditis, fibrinous or ser-fibrinous pleurisy, caseated lymph glands, etc.

The carcasses of animals dead from the disease are always greatly emaciated and show manifestations of a general anemia and cachexia.

Symptoms.—The symptoms usually appear inside of 24 to 48 hours after birth; exceptionally somewhat later, and in rare cases the animals may be born affected with it. In some cases the symptoms of local affection of the umbilicus precede the general affection. It swells, becomes sensitive and feels warm.

These symptoms may subside after a few days of appropriate treatment, but in the majority of cases the local inflammatory processes increase in severity, and symptoms of a general septic infection develop, sometimes rapidly, in other cases gradually. The general affection is indicated by symptoms of a general febrile condition. The animals lose their desire to suck, become depressed and dull, and lie almost continually. The body temperature is elevated and pulse and respiration accelerated. This condition is soon followed by symptoms indicating a metastatic inflammation in some of the internal organs.

Inflammations of the joints make their appearance most frequently and earliest. One or more joints, preferably of extremities, swell, become warm, painful and tense; while the surrounding connective tissue is edematous. These swellings may disappear, but more often a fluctuation appears and they break at certain points. The discharge is great at first and of a tenacious purulent form. The motility of the affected joints is interfered with by the pain and tense swollen condition. The animal does not support the body with the affected extremity and protect it from touching the floor.

Symptoms showing disturbances of the digestive organs are hardly ever absent. Severe colicky symptoms may appear. The constipation, which is at first present, is followed by diarrhoea, the animals passing first light, later dark colored, very fetid, fluid feces. The feces soil parts around anus and later the excrements and urine are passed involuntarily.

In the meantime, the animals become greatly emaciated, they lose their strength, the eyes are sunken deep into the orbits, the action of the heart becomes accelerated and weak, the body temperature drops below normal, the extremities, the face and the ears become cold, the body is covered with perspiration, and finally the patients die, with symptoms of convulsion or without any struggle.

In the presence of an inflammation of the brain or in affections of the lungs in this disease we see the average symptoms that usually occur in these conditions.

Course.—Very acute septicemic cases result in death in three or four days. Other cases become chronic and last for several weeks.

The percentage of mortalities varies with the different outbreaks; as a rule, however, it amount to over 50 per cent., and only in calves appears somewhat more favorable.

Diagnosis.—The symptoms of this disease are so well marked that it is easy to differentiate it from any other. The acute septicemic form may however be confused with white scours of sucklings, but from the other forms of the disease the latter may be distinguished by the absence of lesions in the lungs and joints.

Treatment.—The inflammation of the umbilicus should be treated according to the rules of surgery, by disinfection of the wounds and, if necessary, by opening of the swellings. The commencing inflammation of the joints may be treated by inunction with gray mercury ointment. However, if the joint contains a great quantity of exudate this should be removed and joint cavity disinfected. In the presence of a general infection the treatment can only consist in the systematic internal administration of stimulants; further, in controlling the gastro-intestinal catarrh which may be present. At the same time, appropriate nutrition should be provided for the patient and affected animal kept in a moderately warm, clean and airy place.

Gott recommends for colts intravenous injections of collargol (80 gr. of a one-half per cent. solution for three days, successively), while Bernhardt uses ichthargan in one-tenth-one-fifth per cent. solution.

Prevention.—The infection of sucklings may be successfully controlled by scrupulous cleanliness in the stables, cleaning of the genital organs of the mother animals and disinfecting the fresh umbilical stump when possible.

Dr. J. A. Dressback, of Stanberry, Mo., in renewing his subscription to the Review, writes: "I am enclosing draft for $3 for next year's subscription; this is 27 times. Keep her coming. Success to you!"

THE BEST OF FORTUNE FOR THE ARMY VETERINARY SERVICE BILL, CROWD BEHIND IT AND FINISH THE WORK IN THE SENATE.

By Garrison Steele, M.D., D.V.M.

"The ripeness or unripeness of the occasion must ever be well weighed; and generally it is good to commit the beginnings of all great actions to Argos with his hundred eyes and the ends to Briarius with his hundred hands; first to watch and then to speed." Bacon's Essay "Of Delay."

"Hope springs eternal in the human breast;
Man never is, but always to be blest."
Campbell's "The Pleasures of Hope."

There is only one more thing to do for the Army Veterinary Service Bill to make it a law, and that is to get it passed on the floor of the Senate. All the other stages of the legislation are over. It passed the Military Committee of the House unanimously early in February; on the floor of the House, without a vote against it, June 29th, and it was favorably reported to the Senate by the whole Senate Committee on Military Affairs on June 26th. Of course it is now on the Senate calendar waiting to be called up on the Senate floor. At least four-fifths of the work of getting the bill through may be said to be over.

There are, however, two dangers: First, the Senate calendar is loaded with bills and it will be difficult to get the measure called up; second, it is a perplexing question what will be the fortune of the bill even if it is called up. Will there be an attempt to amend it? Will it be blocked?

That depends upon the electromotive force in the souls of the friends of the bill all over this continent. The legislators in Washington are very responsive to pressure upon them from all parts of the country if they are persuaded the desire for the

passage of the bill is genuine and hearty. We could give numerous instances where, within the last two years, men in the House and Senate who were opposed to this legislation suffered a change of heart because they found that their constituents meant what they said when they told them the bill should pass.

This is a call to arms for the last, short, sharp struggle to get the bill passed on the Senate floor. We have always said that we would fight this thing through "to the last ditch." We have reached that ditch. The last piece of work is before us. The time has come when every veterinarian who has a drop of missionary blood in his veins must join us in winning in the Senate. Write, telegraph or interview your Senator in the interest of the bill, H. R. 4541—the House bill and the Senate bill are now one, and there is only the one number to mention, that is H. R. 4541.

In this connection we submit to the profession an excerpt taken from *The Army and Navy Journal* for July 4th, and our reply to Senators Hitchcock and Thomas, who, in the "Minority Report," have had the temerity to oppose the bill:

ARMY VETERINARY SERVICE.

The House, on June 29, passed without amendment H. R. 4541, to consolidate the Veterinary Service, U. S. Army. This bill was briefed in our issue, February 7, page 726.

In the Senate on June 26 favorable report was made on S. 4331, which is the same as the House measure. The bill provides for sixty-two veterinarians, the number now in the service, and their commissioning, beginning with the grade of second lieutenant, upon the passage of an examination as to physical, mental and professional qualifications. Promotion is made after five years' service to the grade of first lieutenant, and after fifteen years' service to the grade of captain, upon the passage of a satisfactory examination. The bill also provides for commissioning the veterinarians now in the service according to the length of service upon passing a prescribed

practical professional examination as to fitness for mounted field service. A reserve corps similar to that of the Medical Department is provided for, from which appointment by commission are to be made to the veterinary service. Such reserve veterinarians must be graduates of a recognized veterinary college or university and have passed a prescribed examination. The report says:

"The United States appears to be unique in the fact that we are the only one of the great Powers which has not given rank and commission to the veterinarians in the Army, although we have heretofore provided for commissioned officers in the Dental Corps, to chaplains and to paymasters.

"With 22,522 horses and 10,897 mules in the Army, and the cost of such animals increasing every year, there should be some one having authority to prescribe proper treatment to sick or diseased horses, or in cases of epidemic, and to prevent losses which are bound to ensue from such causes where there are not competent professional veterinarians in the Army. The better class of graduates of veterinary schools are not now attracted to the service in the Army, where they do not have power to recommend treatment to animals and to know that such recommendations will be carried out. Veterinarians now in the service are nothing more than contract civilians and have no control of any sort over the animals they are expected to protect. They cannot even direct a stable orderly to carry out their wishes in the care of animals. The increase in cost of this service under the bill will approximate $31,000, due to increase in pay and for length of service.

"General Wotherspoon, Chief of Staff, appeared before the sub-committee to which the bill was referred and stated that the War Department and he himself were unequivocally in favor of the bill and recommended its passage."

Messrs. Hitchcock and Thomas, in the same report, give their minority views as follows:

"We regret that we cannot join our colleagues on the committee in favorably reporting S. 4331. This bill is the product

of fifteen years of agitation, carried on very largely by the American Veterinary Association, having some 3,000 members scattered over the country. They originated it, they have advocated it, and they have pushed it because of the advantage it would bring to the veterinarians who become its beneficiaries. It involves an increase in the cost of the veterinary service of about thirty-seven per cent. It makes some increase in the number of men employed as veterinarians and inspectors, but it makes a much larger increase in pay and in ultimate cost to the Government by giving to some the rank of officers and by retirement with official rank. It is another step in the direction of loading down the military service with civilian attachments.

"It is easy to argue that these changes work for efficiency in the Army. Perhaps they do to some extent, but we think the claim is largely exaggerated, and that the real motive is to get a permanent place on the government pay roll. If this bill passes we will have the spectacle of Army veterinarians retired at the age of sixty-two, practicing their profession comfortably and enjoying the government retired pay. There is a reason for retiring officers at a certain age and giving them retired pay, because their military service has unfitted them for any practical walk in life, but in our opinion it is a bad practice to take professional men and treat them in the same way. They do not need the benefits of retirement on pay any more than professional men in civil life need such assistance."

REPLY TO MINORITY REPORT OF SENATORS HITCHCOCK AND THOMAS.

We have great respect for the expression of thought of the opponents of this legislation and for the honesty of their opinions. Though their words have in them the ring of conviction, the opponents are in error in their statements; they are misinformed as to the intents and purposes of this bill; and they are looking at the measure from too low an altitude, where their vision is confined to what may appear to be a merely ephemeral aspect of the bill. We wish, therefore, to make a short reply to their report and to take up the statements seriatim:

1. Though the measure came into being through the instrumentality of The American Veterinary Medical Association, with its three thousand members, its real origin was in the hearts and minds of the tens of thousands of veterinarians in the national, state and city association throughout the continent. We admit that the bill crystallizes the united thought of this large body of men and that the extent of support of the plan has greatly increased each year for thirty-five years; but we submit that the main purpose of the bill is betterment of the public interest. We constitute with our clients a large part of the body politic, or the voting population, and we are sure that it is our bounden duty as citizens to do our best for the common weal, for the national good, in every way that our work touches the life of the nation, we deny that our motives are not as patriotic as those of legislators who represent us in the Senate.

2. The Minority Report is in error when it says the bill makes an increase in the number of veterinarians in the army. The Majority Report is correct. There is no increase involved.

3. Senators Hitchcock and Thomas refer to the insignificantly small increase in cost involved long enough only to deny the benefits of the outlay to the Government. In the Hearing before the Sub-Committee, when Senator Hitchcock was present, Major-General Wotherspoon, Chief of Staff, expressly stated that the small increase in cost was warranted by the better men that would be obtained. If the War Department wants high intelligence put into its veterinary work, why, in face of this expert testimony, should the Minority Report question the truth expressed by this officer? Was he not honor bound to speak the truth? He said that the small increase in cost would bring better men to the army veterinary service and that the value of the work done would more than cover the small increased cost. His unequivocal statement cannot be reasonably questioned.

4. The Minority Report goes on to say that the commissioning of veterinarians is another step in loading down the military service with civilian attachments. It is a mistake to suppose, as Senators Hitchcock and Thomas evidently do, that

the physician who keeps up the health of the men and the veterinarian who keeps up the health of the horses is not about as much a necessary part of the army organization as the soldier and his commander. The provisions for the health of man and beast are as vital to the organic life of the military establishment as the fighting element; for military statistics show everywhere that in the past most of the deaths of man and beast have been caused not by the bullet but by disease. Every part of that complete military organization which depends for efficiency on high intelligence should have equal consideration under our military laws. Civilians are out of place in the army and that is the very reason why the veterinarian should be given his proper military place in our army as he is given in the army of every other military power on earth but ours. This is the intention of the bill.

5. The Minority Report says that if the bill passes we will have the spectacle of retired army veterinarians at the advanced age of 62 years practicing while enjoying a government pension. The spectacle would rather be that of men infirm from having given their lives from their 21st year to their 64th in the service of the government now useless because they have had to go with their regiments in every clime and experience the rigors of army life the same as their brother officers. Do these Senators believe that communities into which army doctors retire would call infirm and worn out men for medical attendance? This is the day of young men. The aged doctor is not wanted.

6. Senators Hitchcock and Thomas in conclusion say that aged professional men in the army do not need the benefits of retirement on pay any more than professional men in civil life, because they are not exposed to the dangers of military service. Do not professional men like the physician and the veterinarian have to go with their regiments wherever they go? Are they not bound hand and foot in the military organization? The veterinarian is with his regiment in its campaigns. It is a logical conclusion that he should not be denied the benefits of retirement any more than his military comrades.

BIORIZATION OF MILK.*

By Otto G. Noack, V.M.D., State Meat Inspector, Reading, Pa.

One of the most perfect foods provided by nature for the newly-born we find in the milk produced by the mammary gland of the maternal mammal. The young grow, thrive and develop best by nature's own compound. The milk of all mammalia is similar in its composition with a slight variation as to the contents of albumen, milk sugar or fat.

With the recognition of its food value and the cheapness of production, milk soon became an economic factor in the human household. That the milch cow became the provider of this food for the human family was a matter of economics, because a cow could be made to produce larger quantities of this valuable fluid cheaper by far than any other animal.

In the course of time, it became apparent that certain dangers were connected with the use of milk. It soon was shown that the milk was a good and easy vehicle to transmit diseases from animal to man, and from man to man just as well. Furthermore, it was discovered that from contaminated milk came many infantile ailments, especially diarrhea, caused by the bacterium coli.

Not to lose such a valuable adjunct of food for the human family, many methods were introduced to destroy, or at least lessen, the causes of these dangers in the milk.

The methods naturally consisted first in the use of chemicals, because the disinfectants had been found the best germ killing agents, but had to be abandoned on account of their danger to the health of the human being; although even Von Behring recommended one drop of formaldehyde to a quart of milk—

* Read before the Schuylkill Valley Veterinary Medical Association, June, 1914.

sufficient to destroy all germ-life, and not strong enough to do any harm to the infant's system.

How innocuous for the customer by the conscientious vendor, but how disastrous in the hands of the unscrupulous dealer, who would not care if he added 2, 3 or more drops to the quart.

Another method applied was the use of electricity or the ultra-violet rays to destroy the pathogenic micro-organisms. No matter how beneficial the modus operandi was, the expense made its use prohibitive, the heating process alone seemed to be practicable, and, from an economic point of view, feasible, although having some disadvantages. The heating processes used were sterilization and pasteurization.

Pasteurization, if not done properly in accordance with the rules promulgated by the authorities as to the degree of heat and length of time of exposure, might as well not be undertaken at all, because it only becomes a deception of the customer, without any safety. This shows that reliable pasteurization can be done only under official supervision.

While such a procedure makes reliable pasteurization expensive or otherwise impossible, other methods were looked for. Besides pasteurization is an imperfect process, changing the taste and the chemical consistency of the milk.

Two years ago the chemist, Dr. Oscar Lohbeck, succeeded in inventing an apparatus which he calls "*biorizator.*" The biorzator is a vat containing a chamber which is heated by circulating steam to 75 degress C., or 167 degress F., whereinto the milk is driven through an atomizer in a spray under a pressure of three to four pounds.

The milk, coming in the hot chamber in a fine spray, is naturally at once heated up to the temperature of the surroundings.

The temperature of the milk leaving the hot chamber is reduced, the biorizator being connected with a cooling apparatus, immediately to 50 degrees F.

The consequence of such a process is the destruction of all pathogenic germs, because every particle of the milk is heated

up to 167 degrees F., a degree high enough to kill disease-spreading organisms; on the other hand, the rapid cooling causes a stay in the development of all other germs which are able to survive such a high degree of heat; for instance, the hay bacillus or some other peptonizing bacteria which are of no importance as far as the health of people enters into question.

A biorization plant consists of a suction pump, compressor and a germ destroying apparatus or biorizator, which is connected with a cooling apparatus in conjunction with a bottle-filling machine. The whole apparatus is easily opened and cleansed after use and before use. The whole apparatus will work automatically, regulated by safety valve and manometer. Whereas, by pasteurization the milk is heated in bulk and some time has to pass until the whole volume is heated up, the molecules of milk, especially albumen, salts, etc., are slowly prepared to undergo chemical changes influencing the digestibility and taste.

Entirely different in biorization! There the fine, thin drops are suddenly raised from 50 degrees F. to 167 degrees F., and before any chemical change can take place the milk has left the hot chamber and is in the cooling apparatus.

The consequence is that by this process the milk preserves the natural taste, appearance and color of raw milk, but loses the odor of the stable and does not contain pathogenic germs. Furthermore, the enzymes—katalose and reductase—are attenuated and biorizated milk can be kept longer without spoiling than any other milk.

This process is bound to take the place of pasteurization, or any other process, on account of its simplicity, and saving of time and labor. This process is not alone of importance for mankind, but also for cattle and hogs, on account of feeding the skimmed milk returned from the creameries. No tuberculosis can be transmitted from the mixed milk which has undergone the biorization process, but infection by tubercular bacilli may occur if the milk was pasteurized, and not exposed long enough to the prescribed temperature.

The bacteria, especially the pathogenic, are absolutely destroyed. Experiments showed that, for instance, cholera, typhoid, tubercle, dysenteric, bacillus Gaertneri, bacillus pyocyaneus, bacterium coli, bacillus fluorescens, liquefaciens, chrenotrix, streptotrix were killed by biorization. Hay bacilli and other resistent germs, without any influence on the human or animal system, would survive the process. Special and thorough experiments were made with tubercle bacilli. It was found that animals inoculated with samples of biorizated milk were not affected at all, while the controls with samples from the same milk, but in the raw state, treated, soon died of tuberculosis.

The same results were found in his experiments with biorizated milk by Dr. Hoffman, director of the hygienic institute of Leipsic University; and also by Dr. Kirchner, Director of the Agricultural Department.

Dr. F. Hering, of Zittau, in his article, *Biorization,* says it is easily understood that a milk chemically unchanged, biologically active and still cheap, which is free of all danger of infection. is of the highest importance in the fight against tuberculosis and mortality of infants.

Lorenzen shows that biorizated milk can be kept twice as long as pasteurized milk.

A pasteurization plant is easily changed to a biorization plant by simply installing the biorizator in place of the pasteurizer. There is no doubt that biorization will soon take the place of pasteurization, and Dr. Schlossman states, in the *Archives Therapic,* after making extensive experiments, especially with pathogenic germs, that biorization will revolutionize the milk question for infants and the use of milk.

Has New, Well Equipped Veterinary Hospital.—Dr. L. J. Herring, Wilson, North Carolina, has recently moved into a new, thoroughly up-to-date veterinary hospital, with 18 box stalls. It has a fine operating room thoroughly equipped. We congratulate the doctor and wish him every success.

INDOLENT BOVINE PLACENTAE.*

By W. Harry Lynch, D.V.S., Portland, Me.

I am looking forward expectantly to the discussion of this topic, for I doubt there being any practitioner here who has not encountered this condition many and ofttimes. Also the fact that it is difficult to make hard and fast rules to govern its treatment, since each case seems to be largely in a class to itself. It is as often as not a proposition alone, running counter to the superstitions of the laity where we are summoned to care for these clinics; so I hope every man here will give us some of his experiences along these lines.

The growth of the livestock industry in the State of Maine will generally make it practically impossible for any member of our association engaging in general practice to escape experience.

Compared with the uterus of a mare, the cow has some striking differences; for instance, the concave curvatures of the cornua look downward, whereas, in the mare they are in the opposite direction; though in both the broad ligaments are attached to this concavity. Consequently, if the uterus of a cow be considered as freely suspended in the cavity of the abdomen, the extremity of the horn is twisted outwards and upwards, while its base near the body of the organ, although drawn in the same direction by the ligaments, yet retains its position, being firmly maintained in it by the body of the uterus, which also receives the insertion of the broad ligaments on its lower plane.

This insertion causes the uterus to project above them; while in the mare, in which the ligaments are inserted at the upper part of the body, the uterus projects below them. These ligaments are extensive in the cow, and may be compared to a triangular sheet one angle of which is fixed to the floor of the pelvis, the other two to the tuberosities of the ilia, the body of

* Read before the Maine Veterinary Medical Association at Rockland, July, 1914.

the uterus resting on this sheet, also a portion of the cornua which are thin and tapering at their anterior extremity, body short and narrow with interior of the uterus less ample than the mare.

A wider divergence comes now in the caruncles or cotyledonal processes which some of the authors I have consulted inform me are peculiar solely to the bovines—not being in the mare, pig or carnivora. These caruncles are few and small in the uterus, becoming more numerous in the cornua. At birth a female calf has from thirty to forty; and one hundred and twenty have been counted in a cow after parturition. Each is attached to the mucous membrane by a narrow pedicle and in removing the foetal placenta—literally unbuttoning it, we must use care not to complicate our case by tearing them off, thus making a laceration.

Since bovine placentae are normally of longer retention than any of our subjects, I always counsel the man who calls me within twenty or thirty hours to treat this condition to wait a little longer, for I do not wish to risk getting a hemorrhage, which might ensue with premature removal of secundine. None of the authors I have consulted tell me just what happens immediately following parturition, merely that expulsion is followed by contraction of the uterus. But I find in actual practice that the uterus may contract without expelling the membrane; and varying degrees of intimacy between the cotyledons and so whatever causes this must be the cause of the retention of the foetal membranes.

Various sequelae are the outcome of this condition. Long continued presence of the secundine is apt to be followed by leucorrhoea, septicemia, pyemia, metritis, and diarrhoea with subsequent debility and danger to health of persons using the milk. Rising temperature and uneasiness are fairly diagnostic of uterine complications. I find a variance as to treatment among the authors I have consulted, some reliance being placed in douches; personally I have not found any drug to be specific, but I remove the cause of the trouble, after a reasonable interval

of a few days, by manual traction. If I find too high a temperature, I give a corrective; if loss of condition, give a tonic; but in my worst cases where there is extreme debility with septicemia either developed or incipient, I find good results follow the use of echinacea. I use fluid extract with, as I have said, fair success.

Some of my clients think these membranes should be speedily removed; others who are more versed in cattle lore, appreciate the fact that within a reasonable period the membranes are likely to disengage without interference, in which opinion they are confirmed by me; as personally I find it impossible to remove them without injuring the caruncles in the majority of the cases, as they are so intimately connected that they will tear sooner than come apart. The third day is early enough for interference usually, but if it could be done sooner it would be better.

I clean the uterus after removing membranes with an irrigation pump. Give tonics, order blankets put on if there is chill and shivering. Finally, as I previously stated, if septicemia is imminent or developing I use echinacea, with a fair number of cures resultant therefrom.

Second Sailing List. Official Tour of A. V. M. A.—July 10, 1914: Secretary N. S. Mayo, Chicago, Ill.; John F. De Vine, Goshen, N. Y.; H. D. Gill, New York City; E. B. Ackerman, Brooklyn, N. Y.; J. H. Blattenberg, Lima, Ohio; E. F. Sanford, Brooklyn, N. Y.; Ross Huson, Albany, N. Y.; Reginald Morgan, Elgin, Ill.; D. M. Campbell, Elgin, Ill.; Mrs. H. D. Gill, Mrs. D. M. Campbell, Mrs. H. J. Brotheridge, Miss G. E. Brotheridge.

Third and Final Sailing List to Veterinary Congress in London—July 25th, 1914: Dr. S. Brenton, Detroit, Mich., and Dr. W. J. McKinney, Brooklyn, N. Y. Dr. W. L. Williams, Ithaca, N. Y., with Mrs. Williams, is traveling about in Ireland, and will be in London in time for the Congress.

THE BOW LINE ON A BIGHT—THE BOW LINE.

By Prof. H. E. KINGMAN, Chair of Surgery, Fort Collins, Colo.



Bow Line on Bight, 1.



Bow Line on Bight, 2.



Bow Line on Bight, 3.



Bow Line on Bight, 4.

The bow line on a bight is principally used in making a side line of a rope or where a rope is used without a harness for casting an animal. It is easily tied and cannot be pulled into a hard knot.



Bow Line, 1. Bow Line, 2.

The bow line is known throughout the country, but is worthy of description for the benefit of those not familiar with its usefulness. It may always be easily untied no matter how much tension has been administered.

Past President Brenton, of A. V. M. A., paid us a visit before sailing for London to attend the International Congress on July 25, 1914.

No Other Such Asset for the Veterinarian as Association Work.—Commenting upon the organization of the Western New York Veterinary Medical Association, at Buffalo, in April, as published in our June issue, pages 369 and 371, Dr. Walter G. Hollingworth truthfully remarks that the local organizations in the states are a great help to the A. V. M. A., and that there is *no other such asset for the veterinarian as association work.* That is true, and there is no work that a veterinarian can do that will bear better fruit to his chosen profession than to see that *his* community has an organization of veterinarians, if he has to bring them in from a 25-mile area to make a quorum. That is why we always find room to report a veterinary association meeting.

REPORTS OF CASES.

INTERESTING POST MORTEMS.

By Crittenden Ross, D.V.M., New York, N. Y.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

It having been my privilege to hold post mortems on the three following cases, I report my findings for what they may be worth to members of the veterinary profession:

Intussusception of Duodenum.—Egyptian poodle five and a half months old and weighing 16¾ ounces, was presented for treatment, having a very fetid breath and copious movements of feces, liquid in consistency and of a bright yellow color. There was no appetite, and the puppy seemed to be suffering great pain, which was more noticeable at times. The mucous membranes appeared rather anaemic and there was a rise of temperature. Enteritis was diagnosed and a grave prognosis was given. After 48 hours' treatment, during which time the bowel movements became less frequent and less copious, the patient being kept on beef tea and tonics, it died, apparently without pain. Upon post-mortem examination the intestinal tract showed inflammatory changes, and about six inches posterior to the stomach there was an intussusception of the duodenum for a distance of 2½ inches, thus involving 5 inches of the mesenteric blood supply and causing an extensive congestion and inflammation, which had become gangrenous shortly before death, which accounted for the puppy dying without pain.

Some Internal Lesions Resulting from a Crush.—Dog (young pup), brought to office with history of having been crushed by the front wheel of an automobile just a few blocks distant and instantly rushed to the office. The muscles of the body were relaxed, mouth filled with blood; the blood was swabbed from the mouth and dog completed a few respirations. The heart was at first strong, but gradually grew weaker and weaker, and the mucous membranes became anaemic.

Internal hemorrhage was suspected. Post mortem revealed *no* fractured bones, which was *not* as expected.

The thoracic and abdominal cavities were both filled with blood, and large blood clots were found in each. Found lungs congested, alveolar-wall had been ruptured and the air sacks were filled with blood, giving them a distinct red color, with the exception of a very small streak along the dorsal portion of the left lung. The heart did not show any noticeable changes. The posterior vena cava however was split in shreds.

In the abdominal cavity the mesenteric vessels were all engorged, showing splendidly the intestinal circulation. The liver was lacerated, having large areas of the parenchymatous tissue exposed and capsule torn from over it in three places; these crevices extended over half-way through the thickness of the liver.

Appendicitis in a Dog?—Fox terrier puppy, about five months old, was taken suddenly with severe pain resembling acute peritonitis. Anodyne treatment and hot applications were ordered, but despite all efforts to relieve the symptoms the puppy died within 12 hours. On post mortem the following lesions were found:

Evidence of inflammation in the form of petechial hemorrhages over the distal half of the caecum, which was almost entirely shut off by a constriction from the remainder of the bowel, resembling closely in form the human appendix and suggesting forcibly the possible presence of a case of appendicitis in the canine.

Note.—Fifteen interesting case reports will be found on pages 586 to 589 this issue.

Made Chief Inspector.—John I. Handley, D.V.M., B.Sc., Charlotte, N. C., has been made Chief Meat and Milk Inspector of that city.

The Cost of Raising a Dairy Cow.—Department of Agriculture Bulletin No. 49, under the above caption, states that after a trial on 117 calves from birth to the time they enter the dairy herd, it has been proven that the cost of raising a dairy heifer, one year old, on a Wisconsin farm, is $39.52; two years old, $61.41; these estimates also applying to other dairy districts in the North and East, where land and feed values are similar to those in Wisconsin.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Sunstroke in American Thoroughbred Gelding [*A. Seton-Milne-Munic., V.S., British Guiana.*]—Nine-year-old gelding after five years racing was broken to harness. Taken very sick, he was found by the writer lying down, blowing hard and with a temperature of 109 degrees F. It was not possible to get him on his feet. Ice was applied on his head and spine and fanning was kept up. A mixture of tinct. digitalis, liq. ammon. acet., spir. aeth. nit. and water was put up and given to him. After half an hour the temperature went down to 108½, to 105 in the evening, 103 the next morning. Strong frictions were also applied on legs and body. Gradually improvement was manifested, the animal could be raised, he was placed in a comfortable loose box and in a few days was all right.

This is the second case of sunstroke seen in the tropics by the author, and the highest temperature he has recorded with a recovery.—(*Vet. Rec.*)

Bilaterial Luxation of the Lens in a Dog [*G. O. Rushie Grey, M.R.C.V.S., B. Sc.*].—In an article published on that condition where the etiology, pathological changes, symptoms and treatment of the disease are considered, the author relates the following which occurred in a five-year-old fox terrier. The animal was in the habit of fighting cats and pushing its head into rats' holes. After a while he was noticed to walk into objects, as if seeing imperfectly, and later would always keep the eyelids tightly closed. Blepharospasm was great and cocaine had to be instilled to permit examination. The pupil appeared widely dilated, but this was due to an anterior luxation of the lens with the consequent pushing backwards of the iris. The lens was situated in the anterior chamber, normal in appearance and in both eyes had been arrested in the pupillary field. The cornea showed a posterior keratitis. Extraction of the lens

was advised, and will be the subject for another publication.—(*Vet. News.*)

Clinical Post Pharyngeal Surgery [*R. Jones, M.R.C.V.S.*].—Interesting records of three cases, two of which showing the impropriety of never operating on the throat, when there is difficulty in breathing, without previously performing tracheotomy.

First Case.—Bullock had actinomycosis of the back of the tongue and throat, which was successfully relieved by iodine treatment. After a few months he is ailing again with a tumor at the back of the pharynx, hanging in front of the larynx. Thrown to be operated, he suffocated and the insertion of a tracheotomy tube only saved his life and permitted the removal of a mushroom-like shaped tumor, with the ecrasuer. Recovery followed without trouble.

Second Case.—Pregnant heifer was making a noise in breathing. As her condition is not alarming, she is left until she had calved. When then, as she had grown worse in her respiration and was refusing food, she was to be cast to be operated of a pharyngeal abscess. As she was thrown, danger of suffocation became such that tracheotomy had to be immediately performed and a tube introduced. The mouth of the animal was then opened wide, and examination revealed an abscess on the superior surface of the pharynx. It was torn open with the finger and a gush of pus escaped. Recovery followed.

Third Case.—Was that of a barren cow, which had a tumor in the jugular groove, a few inches from the larynx between the trachea and the cervical vertebrae. After a few days of expectation the case became more serious and the cow had to be operated or die. By careful dissection the swelling was isolated from the tissues covering it; when exposed it was lanced with a trocar and a large quantity of pus escaped through the canula. Recovery was uneventful.—(*Vet. News.*)

Metastasic Strangles In An Aged Horse, Followed By Symptoms Simulating Purpura, Ending With Poll Evil, Treated With Autogenous Vaccines and Sero-Vaccine, Recovery [*W. M. Scott, F.R.C.V.S., F.R.M.S.*].—Ten-year-old cart gelding, the seventh on a farm to become affected with strangles. First he had a unilateral submaxillary swelling (hard and painful, which treated, matured and was

lanced. The following day he was protruding his nose, refused his food some and when drinking, water returned through his nostrils. The temperature goes up to 106 degrees F. A swelling is noticed on the left parotid region. Post-pharyngeal abscess is developing. It bursts and relief followed. Then appeared oedema of the nose, lips, chest, abdomen and hind legs, similar to those seen in purpura. But no petechias are present. After a few days these swellings disappeared, and then the horse looks as if convalescent. Suddenly he again protrudes his nose, his head is carried high in a stiff manner. The poll presents a bilateral swelling, gradually enlarging, which took a week to mature. It was lanced, treated and finally the horse recovered.

The treatment consisted medicinally in the application of powder of citric acid, chlor. of potass, and boric acid placed on the tongue three times a day. Injections of a stock vaccine obtained from a case in the same stable composed of 500,000,000 strept. and 750,000,000 staphiloc. An autogenous vaccine was used also of 750,000,000 and of 500,000,000 strept. Free incisions were made in the lancing of the poll evil. Cold water irrigations with plugging the wound with citrate and chloride of sodium were also resorted to.—(*Vet. News.*)

Botryomycosis in a Cob [*G. Mayall, M.R.C.V.S.*].—Nine-year-old cob had a swelling on the point of the shoulder; it is broad, hard and painful. Tincture of iodine is injected into it, and biniodide of mercury ointment rubbed over it. Iodide of potash is also administered three times a day. Two days later the injection of tincture and the blisters are renewed. The tumor fluctuated, was lanced and a quart of pus let out. Iodide internally is continued. The swelling diminished a little, but was still hard at the base. Same injection at the wound of incision made again. Gradually the enlargement goes down. Another blister is applied, nitrate of silver is introduced in the wound and its depth causticked. Finally the growth is almost all gone, the shoulder has resumed its natural form and the cob went to work. The treatment lasted one month.—(*Vet. Journ.*)

Flank Incision for Operation of Cryptorchid [*E. C. Winter, F.R.C.V.S.*].—The author has used this method and is in favor of it when comparing with the inguinal. He operates above the fold of skin in the right flank, sometimes on the left or on the right, according to the position of the testicle. The skin is shaved, cleaned by scrubbing with ethereal soap and anti-

septics and painting with iodine. The incision is made almost in a vertical direction, being readily closed afterwards by sutures. In his experience, the author has met with very little swelling, no interference with urination, no hernia, no adhesion of the bowel or omentum to the operation wound.—(*Ibid.*)

Interesting Cystotomy [*W. C. Haselton, M.R.C.V.S.*].—Case of a Pekinese bitch, four years old, which was relieved of a urinary calculus by suprapubic cystotomy. The stone weighed three-quarters of an ounce and was about as large as a walnut. Recovery was uninterrupted, and the little thing became pregnant shortly after.—(*Vet. Journ.*)

FRENCH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Recovery of Several Cases of Fracture [*Major Tatin, Army Vet.*].—The author thinks that too often animals suffering with fracture are too hastily destroyed, as recovery may be obtained without treatment, without apparatus and in trusting to nature alone. Especially is the case for mares, which may at least be used for breeding purposes. Three recoveries are presented to sustain the proposal.

A mare arriving at her regiment has a fall and as consequence a complete fracture of the pelvis, with splinters, situated back of the cotyloid cavity. She is put at liberty in a field. Four months after, she is scarcely lame and the callus almost all absorbed. There remained only a slight dropping of the croup. The mare returned to work.

A horse, while being shod, struggled, stamped his left forefoot on the floor, he is lame—on three legs. All symptoms of fracture of the third phalanx are present. Without any treatment, he is scarcely lame two months after. Dead four months later, the phalanx showed evidences of consolidated fracture.

A third case, brood mare has a fracture of the coronet. She is pregnant. A wadding dressing only is put on. Eight months after, having been at liberty in a box, she has an enormous callus round the coronet, the fracture is consolidated and since has continued her career of brood mare.—(*Rev. Vet. Milit.*)

Strangulated Diaphragmatic Hernia [*Major Floquet, Army Veter.*].—Followed by the writer, the case presented peculiar manifestations, which are resumed as follows: "The horse kept turning in his box, carefully kneeling down, and then in complete dorsal decubitus with the four legs flexed and the head turned towards the shoulder. He remained in that position until urged to get up. Scarcely he is standing than again he bends down on his knees, flexes his neck and head on the sternum and after a few seconds he drops on the lateral decubitus." Towards the end of the attack "the horse threw himself violently forwards, went through the same action, tried to get up, made a somersault and died. At the autopsy was found an old hernia of the posterior portion of the small intestine, strangulated by the passage through the hernial ring of a piece of the diaphragmatic curvature of the large colon, which was as big as the fist.—(*Rev. Veter. Milit.*)

Necrosis of the Nasal Cartilages [*Prof. Cadeac.*].—The wings of the nostrils with their cartilages and those of the inferior portion of the septum nasi are sometimes the seat of necrosis by bites, contused wounds or tearings of these regions.

The necrosed region is the seat of a diffused, indurated swelling, invaded sooner or later the entire internal wing and extends to the median septum. When this is involved, the swelling is bilateral. The necrosis is indicated by one or several openings, fistulous, with granulating edges, with escape of greyish bloody fluid. This local infection is accompanied with hypertrophy and induration of the subglossal lymph glands. It may last as long as the cartilaginous tissue of the diseased wing has not been necrosed. This may demand months, and when it has taken place, the wing of the nostrils drops, the nasal cavity is smaller, respiration is more difficult and roaring ensues.

Necrosis of the cartilaginous septum may follow that of the nostrils and by extension of the infectious process a perforation of this septum may follow.

Free incision of the fistula, stopping of the hemorrhage, simple antiseptic injections, or again slightly caustics, generally bring on recovery after a few weeks. Cauterization with nitrate of silver or chloride of zinc may hasten the cure.—*Journ. de Zootech.*.)

Necrosis of the Turbinated Bones [*By the Same*].—It succeeds to purulent collection of those cavities. It is then a com-

plication of curves of the molar tents, acute or chronic coryza, or traumatism. Acute or chronic sinosities often give rise to it. It also occurs frequently in colts. *Symptoms:* Foetid, unilateral, nasal discharge, yellow or whitish, resembling that of acute or chronic sinusitis; more or less severe dyspnea or even roaring; slight subglossal adenopathy. Swelling of the facial bones soon follows: it is hard at first, but gradually becomes softer. Percussion of the region gives a dull sound and is accompanied with great pain. This necrosis is frequently complicated by meningitis or cerebral abscesses with symptoms of immobility, troubles in sight and choreaform actions. The treatment consists in trephining the nasal cavity and the sinuses involved, resecting of the necrosed turbinated and antiseptic irrigations and dressings. The necrosis is liable to return. The degeneration of the mucous membrane is incurable.—(*Ibid.*)

Purulent Infection from Strangles in a Horse [*Major Vignard, Army Veter.*]—A six-year-old gelding is laid up, and successively develops symptoms which permit a diagnosis of pulmonary trouble, with origin from strangles, as the disease is prevailing in its surroundings. After treatment, he rallies from that, but manifests the symptoms of pleurisy. Those are followed after a few days by abundant and fetid diarrhœa, which is relieved with salt, salicylate of soda and muriate of morphia. Then the animal appears stiff on his hind quarters, he staggers and seems in pain when made to turn suddenly. Abscess of the loins is suspected. Gradually the condition is worse, and after losing flesh rapidly he dies after an illness of 22 days. *Post mortem:* Abundant collection of pus is found in opening the abdominal cavity. Lesions of acute peritonitis are noticed all over. The liver, three times its normal size, is stuffed with abscesses, of various sizes and containing thick, yellowish pus. The organ is adherent to the diaphragm by its anterior face. The spleen is normal. The kidneys congested. An abscess as big as an apple is in the sublumbar region, little back of the right kidney. In the thorax, pleura is congested, lungs are healthy. There is an abscess as big as a man's fist near the point of the heart and promotes the adhesion of the pericardium to the parietal pleura. Finally another abscess is found at the entrance of the chest on the internal face of the first left rib. The nervous system was healthy.—(*Rev. Veter.*)

Abscess of Myocardium Follows Foot and Mouth Disease in a Bull [*Mr. Barrat*].—The animal died suddenly with-

out having presented sufficient alterations in his health to make such lesion suspected. He took his meal one evening, bellowed once, fell, struggled some and died. At the autopsy the heart only showed lesions. It was pale in color and the ventricles filled with blood clot. The interventricular septum, towards its superior part, had a tumor, as big as a hen's egg, containing white, creamy pus. The walls of the abscess were one centimeter thick. A second collection was enclosed in the wall of the left ventricle towards the inferior position. The endocardium presented no inflammation, nor ulceration. The two abscesses had no communication with the cavities of the ventricle.

The bull had had a very severe attack of foot and mouth disease several months previous and for the author that was the cause of the heart disease.—(*Rev. Vet.*)

ITALIAN REVIEW.

By Prof. A. Liautard, M.D., V.M.

Pantopon in Colics [*Prof. A. Vachetta*].—Pantopon Roche is a preparation much used in human medicine, as an hypnotic, sedative, analgesic and toni-cardiac. It contains under the form of soluble muriates all the alkaloids of opium. The case here recorded is, I believe, the first in veterinary medicine, where these properties were fully tested. After work, a racing filly was given a drastic bolus. She drank cold water from a pail shortly after and was then taken with violent colic, manifested by great pains and severe symptoms. Rectal injections, general frictions, pilocarpine and eserine failed to give any relief or bring any defecation. Another larger dose of pilocarpine was about to be given when instead the author prescribed six tablettes of pantopon, dissolved in sterile water, to be injected in the jugular. The effect was almost immediate; one minute after the injection the animal became quiet, the temperature came down to 40, the respiration to 12. The mare began to look for food. She was watched, fed slightly and during the night had several abundant passages. Spasms of the intestines followed the drinking of cold water and not until they were relieved by the pantopon's action, actions of the mastic could not take place.—(*Il Nuovo Ercol.*)

Hepatic Abscess by Foreign Body [*Doct. Girolamo Bianchi*].—This was noticed at a meat inspection of a calf, in a state of nutrition. On the posterior face of the liver there was under

the capsule of Glisson, a swelling of the connective tissue as big as a turkey's egg. The owner of the calf reported that the animal had been fed all the time, only on milk and had received no other food. On opening the tumor in its middle a large quantity of pus was found, and imbedded in the wall a needle, half of which was surrounded by fibrous connective tissue undergoing cartilaginous degeneration, while the other half was in the hepatic parenchyma where it had given rise to abundant proliferation in the connecting tissue. All the other organs were healthy. —(*Il Nuovo Ercol.*)

Tuberculous Pleuritis in a Cow [*By the Same*].—This is peculiar because of its comparative rarity. It was observed in an eight-year-old cow, killed by butcher. She presented the following lesions: normal lungs, except at the apex of the left, where there is a caseous center, the size of a hen's egg and containing a small quantity of pus. That was about the only tuberculous lesion in the lung, but on the pleura there were a very large number of tuberculous deposits, of sizes varying between that of a seed of millet and that of a nut. They were lying against each other, pedunculated, rich in blood vessels, and none were adherent to the contiguous pleura. It was a plain case of granulic (pommeliere), where the lesions were essentially located on the pleura and not in the parenchym of the lungs. There were also a few on the pericardium. The lymph glands were hypertrophied and tuberculous. All the other organs were healthy.—(*Ibidem.*)

Cases of Malarian Urticaria in Horses [*Doct. Riccardo Pili*].—This is the record of two cases of urticaria, which occurred in two young colts as they were taken in from a run to pasture. The symptoms were very characteristic, viz., numerous little puffs on all the surface of the body and specially the back, the flank and the lips which were very swollen and painful. The temperature was 38.6 degrees C. Suspecting that the eruption was of the ordinary cause, viz., improper feeding and digestion, a laxative was prescribed. The result was negative. The symptoms became more severe, temperature raised, general depression suggested the idea of a different cause. The urine became of a red color. Malaria was then suspected. Blood was extracted for microscopic examination. The parasites of malaria were readily discovered with Lignieres method. A treatment of quinine was instituted at the dose of 8 grams a day by intravenous injection. The result was complete recovery in a few days.—(*Ibid.*)

CORRESPONDENCE.

TIDINGS FROM FIRST PARTY OF OFFICIAL TOUR.

On Board S.S. Finland, June 23, 1914.

Editor American Veterinary Review:

We, the members of the official tour of veterinarians to the Tenth International Veterinary Congress, desire to express our most appreciative thanks to our very dear friends who so kindly came to bid farewell to our party.

It certainly was a pleasure to each of us to see the familiar faces at the pier and especially for those who came from distant



points of the U. S. without having any one of his dear ones to wave the last good-bye at our departure from the beloved shores of our country.

The trip aboard the "Finland" was a continuous round of pleasures. A much-needed rest was indulged in by every one

soon after the last glimpses to the shores as they vanished on the horizon, and we settled down comfortably in our steamer chairs. The active life of the veterinarian, however, could not tolerate very long the life of leisure and comfort, and soon groups of our party were seen busying themselves with the various games played aboard the ship. In this regard "shuffle board" was especially indulged in by our party, in which the skill of many of our members brought out many rounds of applause from the galleries which at all times surrounded the players during their well-contested games. The teams were organized and Brothers Marshall and Blair acted as captains. The honors were about the same, but our friend Day, the star performer of the game, is still being jollied with reference to a game in which his team lost by a scoreless game.

It would be unfair not to mention the popularity which our party enjoyed throughout the ocean voyage, and especially the unattached members were always in great demand by the many pretty and intellectual young ladies aboard. This often caused great concern to the director of the tour, as the presence of ministers and priests on board might have assisted in romantic inspirations to our bachelor vets. Fortunately, or unfortunately, it was only a harmless flirtation with pleasant reminiscences for the participants.

The weather was all that could be desired, and sea sickness was an unknown malady aboard. There was no call for the aloe balls, colic drenches and other heroic remedies which constituted the medicine chest of some of our members and the fish of the ocean were certainly badly treated by our happy family.

We are now all well rested and ready for the strenuous work which is awaiting us on the continent.

With our heartiest greetings to all of our professional brothers in our dear country,

Sincerely yours,

ADOLPH EICHHORN,
C. J. MARSHALL AND WIFE,
HARRY C. MOORE AND WIFE,
E. D. SHEPARD,
T. B. HARRIES,
T. LAMBRECHTS,
F. B. HADLEY,
W. B. HOLMES,
L. ENOS DAY AND WIFE,
J. M. ARINSBURG,
R. C. JULIEN,
W. REID BLAIR AND WIFE,
THOS. FRASER,
CONRAD L. NELSON.

For tidings of second sailing party (received when we were on the presses), see page 604.

REGULATIONS RELATING TO TUBERCULOSIS.

OTTAWA, CANADA, June 25, 1914.

Editor AMERICAN VETERINARY REVIEW, *New York:*

I am enclosing a copy of our new tuberculosis regulations, which enable us for the first time to deal with tuberculosis amongst dairy cattle in a comprehensive way. I am hoping that many of our cities and towns will take advantage of these regulations to clean up the milk supply and eliminate tuberculosis.

1. The aid of the Department of Agriculture, as aforesaid, will be given to such cities or towns having a population of not less than five thousand persons as shall have secured the necessary provisions under provincial legislative authority for the purpose of agreeing to the present regulations.

2. The Government of Canada will assist any city or town, which shall have signified in writing to the Veterinary Director General its desire to have the aid of the Department of Agriculture in controlling bovine tuberculosis in the cows supplying milk and cream to the said city or town, provided the said city or town shall have stated in its application for the aid of the Department of Agriculture, as aforesaid, that, being thereunto duly empowered by law, it will undertake and provide that:

(a) Dairies in which milk or cream are produced for sale therein shall be licensed.

(b) No license shall be issued unless the dairy conforms to the required standard.

(c) The standard shall require that the stable shall have an ample amount of air space, and at least two square feet of window glass for each cow, and shall be well ventilated, drained and kept clean and sanitary.

(d) After two years from the date of the first test of the cattle of any dairy, the sale within the said town or city, of milk or cream from any herd shall be prohibited unless the said herd shows a clean bill of health from the veterinary inspector.

(e) An inspector or inspectors shall be appointed and paid by the said city or town, whose duty it shall be to see that the undertakings and provisions, as aforesaid, are carried out, and that the cows are kept clean and properly fed and cared for.

3. The Veterinary Director General on receiving notice in writing, from any such municipality of its desire to have the assistance of the Department of Agriculture, as aforesaid, shall forthwith make enquiry, and if satisfied that the foregoing re-

quirements are being carried out shall send veterinary inspectors to inspect the said cows.

4. Veterinary inspectors shall use the tuberculin test and also make a careful physical examination of the cows in order to determine whether they are healthy or not. Dairy bulls shall also be examined and subsequently treated in the same way as cows.

5. Following the examination and test the diseased cows and reactors shall be dealt with as follows:

(a) Cows which in the opinion of the inspector are affected with open tuberculosis and are distributing the germs of the disease through the milk, feces or sputum, shall be sent to an abattoir under inspection and there slaughtered as soon as conveniently can be done. When no such abattoir is within reasonable distance, the cows shall be slaughtered in the presence of the inspector, who shall direct how the carcass shall be disposed of.

(b) Reactors to the test shall be separated from non-reactors as effectively as possible (suspicious animals shall be classed as reactors), and the owner shall be given the choice of disposing of them in one of the following ways:

(1) Immediate slaughter.

(2) Slaughter after they have been prepared for the block, by drying off and feeding.

(3) Retaining them in the herd, and selling no milk or cream until it has been pasteurized.

6. Compensation shall be paid to the owner of the herd for all cows slaughtered under these regulations upon the following basis:

(1) One-half the appraised value of the cow if destroyed as a case of open tuberculosis.

(2) One-third the appraised value of the cow if destroyed as a reactor at the request of the owner.

(3) Valuation shall be made by the inspector, and shall not exceed the maximum valuation for cattle as specified in section 6 of the Act.

7. The salvage from the carcass shall be paid to the owner of the cow in addition to the compensation, provided compensation and salvage together amount to less than the appraised value; if more, the surplus shall be paid to the Receiver General.

8. No compensation shall be paid to the owner unless, in the opinion of the Minister, he assists as far as possible in the eradication of the disease by following the instructions of the inspector as to disinfection, etc.

9. No milk or cream shall be sold from a herd containing reactors unless such milk and cream are properly pasteurized. The inspectors of the municipality shall see that this provision is effectively carried out.

10. Tests and examinations of the herds shall be made whenever deemed necessary by the Veterinary Director General, and after each test and examination the herd shall be dealt with in the manner aforesaid.

11. All cows bought by the owner of a herd while under control shall be submitted to the test and successfully pass it before being placed with the healthy cows.

12. When two successive tests fail to detect any reactors in a herd it shall be deemed healthy, and the veterinary inspector shall, when requested, give a certificate to that effect.

13. The existing regulations respecting tuberculosis, in so far as they may be inconsistent with the present regulations, are hereby repealed.

I am sending this copy to you, as it may possibly be of interest to some of your readers either in whole or in part. These regulations constitute a new departure for us in Canada, and until we have had some experience of their operation we will be unable to foretell the result, but I am hoping they will result in great good.

Very truly yours,

FRED. TORRANCE.

CONTROL OF GLANDERS.

BOSTON, June 19, 1914.

Editors AMERICAN VETERINARY REVIEW, *New York:*

Glanders never can be controlled by the present method.

All horses in a state must be tested with ophthalmic mallein and those reacting segregated.

Many horses with a few glanders tubercles in the lungs will undoubtedly recover in time without any treatment other than good hygienic conditions.

These same horses will, however, give the disease to others before recovery.

The percentage of glanders is so great in our large cities that a slaughter of those reacting without apparent symptoms would be too great a financial strain on the owner or even the state if full value were paid.

Kill all cases with evident symptoms and set off all reactors in good condition, killing those in poor physical condition, even if they have no evident symptoms other than the reaction to ophthalmic mallein.

Forbid the sale of all reactors unless they show recovery by a retest.

Compel all horses coming into a state for sale to first pass the ophthalmic mallein test.

Personally I have had the greatest success in this system of segregation.

It meets with the hearty co-operation of the owner who at once appreciates the value from a business standpoint.

DANIEL D. LEE.

NEW YORK, July 20, 1914.

Editor of AMERICAN VETERINARY REVIEW, *New York:*

Dear Sir—On canvassing members of your association in regard to the meeting in New Orleans in December, we find that the majority we have canvassed are expecting you to organize the members for a special train party.

That you may have pleasure on the way as well as in New Orleans, and see some of the world's wonders without extra cost in transportation, I beg leave to suggest that you adopt as your route to New Orleans in December the Shenandoah Valley Route, famous for its scenery, famous for its Caverns of Luray, and of The Grottoes, and Natural Bridge. Besides these three world wonders there is that mecca for tourists, Chattanooga, with its Lookout Mountain and Chickamauga Natural Military Park.

My suggestion is that you leave New York so as to visit Chattanooga on the going journey and Natural Bridge and the caverns on the return trip. This schedule can be easily and pleasantly made by special train, and I am sure no other possible route from the east can offer so much that is attractive to the traveller. Should you select this route an agent of this company will accompany your train and you may look forward to a delightful trip. We will certainly do everything we can to make it such.

Yours very truly,

L. J. ELLIS,
Eastern Passenger Agent.

OBITUARY.

D. W. PATTON, M.D., D.V.M.

Dr. D. W. Patton died May 27, 1914, as the result of an accident, while en route to Omaha, Nebraska, in his automobile; the machine having been struck by a fast train near St. Joseph, Mo. Dr. Patton was born near Brodhead, Wis., April 9, 1869, having just passed his forty-fifth year at the time of his death. When one year old, his parents moved to Iowa, where he was reared and educated in the public schools of Franklin and Carroll counties. At the age of twenty-one he entered the veterinary school of Iowa State College, from which institution he graduated, receiving the degree of Doctor of Veterinary Medicine in 1893. Three years later he entered the B. A. I. service, in which he remained until 1907, when he resigned and went to North Dakota and began the practice of veterinary medicine; in which field he remained until 1914. In the meantime he had received the M. D. degree from the Dearborn Medical College in 1905, and was a licensed practitioner in the State of Illinois. Dr. Patton had decided to re-enter the B. A. I. service, and left North Dakota with that end in view. He had been visiting in the south, and was traveling in his automobile to Omaha when the accident that resulted in his death occurred, cutting him off in the very prime of his life. Dr. Patton is survived by a father and mother, wife, sister and brother, who have the heartfelt sympathy of the whole veterinary profession.

JOHN BUFORD ARCHER, V.S.

Dr. John Buford Archer, son of Captain J. Williamson Archer, and Elizabeth Chambers Archer, was born in Spencer, Owen County, Ind., December 2, 1865, died in Washington, D. C., June 12, 1914, aged 48 years, 6 months, 9 days.

Dr. Archer was graduated from the Spencer High School in May, 1881, and for about three years engaged in farming and stock raising.

During the session 1890-91 he attended the New York College of Veterinary Surgeons, and following this engaged in the real estate business and afterwards the oil business, until the fall of 1900 when he entered the Indiana Veterinary College and graduated from it April 1, 1901.

Since that time he had been engaged in practice at Spencer, Ind. He has been prominent in the councils of the Democratic party of Indiana and at the time of his death was chairman of the Second Congressional District, having been elected to that position last fall.

He was deputy State Veterinarian of Indiana, having been appointed to this position by me in March, 1913.

The cause of death was a stricture of the bowels (a chronic trouble) and acute indigestion, he having been troubled with the latter for some time. He had left this city on June 7th in apparently good health, visiting at my residence and taking dinner with me on that day.

He was taken ill soon after (a few hours) his arrival in Washington, and an operation was performed, but the operation was of no avail.

Dr. Archer was one of the leading veterinarians of Indiana, and as such was held in high esteem by all who knew him, always ready to assist in anything to elevate the profession in this state, and to his efforts are to be credited to a large measure the first veterinary law regulating the practice of veterinary medicine in this state. I was a classmate in the Indiana college with him and knew him, I thought, well, but it was only after over a year's close association with him in this office and meeting him in his home that I could appreciate the character of the man.

The State of Indiana has lost an efficient, careful veterinarian, the State and National veterinary associations one of their best members, and I have lost one of the best friends that I have ever had.

He leaves a widow, three stepchildren, three sisters, two brothers and an aged mother, and to these the profession in Indiana and the Indiana Veterinary Medical Association extend their sympathies in their hour of sorrow.

I am yours respectfully,

A. F. Nelson,

State Veterinarian and Secretary Ind. Vet. Med. Asso.

SOCIETY MEETINGS.

COLORADO VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the above association was held at Fort Collins, May 28 and 29. The majority of the practitioners of the state was in attendance and took part in the discussions and clinic.

The first day was given over to the business meeting and the reading of papers, and the whole of the second day was taken up with the clinic. Much time was spent upon the discussion of a proposed *Tuberculin Test Law,* which would be state-wide in its application. The dairymen of the state have drafted a bill, modeled somewhat after the *Wisconsin Law,* which they had expected to introduce into the next legislature which meets in the fall.

This bill provided that the owner of dairy cattle test his own herd, the records to be submitted to the state veterinarian, who shall make condemnations. Dr. Yard, state veterinarian, reported that after a conference with a number of the leading dairymen, they had seen the weakness in this and that he felt they were in a mood to support a bill which would provide that the testing be done by trained men only. The dairymen feel that since there is little tuberculosis in the state, this is the time to stamp it out, and not wait until we become as badly affected as are some of the eastern states.

A legislative committee of five was appointed to look after this matter at the next meeting of our assembly.

The members of the association took lunch together at the Northern Hotel, after which President A. G. Fisk delivered an address, in which he reviewed the history of the association and pointed out plans for its betterment.

Dr. C. C. Stewart read a paper on the *Intradermal Test for Tuberculosis,* with which he has had very wide experience, having tested somewhere near 1,500 head. He has had opportunity to check the test in some instances with the subcutaneous, and believes it to be as reliable in all cases. His work has been throughout country districts where the *subcutaneous test* would

be a practical impossibility. He felt that he obtained as good results from the ordinary B. A. I. tuberculin as from the alcohol precipitated, which is recommended by the experiment station in California. This paper brought out considerable discussion from the members, a number of whom had had experience with the test. It seems to meet with great favor under our Colorado conditions.

Hog cholera was well taken care of by three different members. Dr. A. A. Herman, after wide experience with the simultaneous vaccination, spoke in favor of that method. Dr. F. Gilgen presented some of his own experiences in treating the disease. Dr. Playne Guyselman gave the results of 18 months' work in the San Luis valley, where hog cholera had practically bankrupted the farmers, and where in the above-mentioned time he with one other veterinarian had been able to completely eradicate it.

This work is of not only local but national interest, because it shows what can be done by the methods used, which were, in this case, the serum alone, absolute quarantine, veterinarians having the authority of deputy sheriffs, thorough cleaning and disinfection were used following each outbreak. No virus has been used in the valley since these men took charge, and they are strongly in favor of the serum-alone method, because they feel that the introduction of the virus merely tends to spread the disease. They are working under the direction of farmers' associations who furnish the money for the work.

These papers will be published in full and the proceedings of the association meeting can be had by writing to the secretary.

In the evening the Veterinary Medical Association of the Colorado Agricultural College entertained the veterinarians at their annual banquet and ball, where every one seemed to enjoy himself to the utmost.

CLINIC.

Case I. Rachitis. *History:* Dogs fed on wheat, owner stated that the corn crop failed so he had to resort to wheat. Dr. Whitehouse suggested that the pups be placed on an alfalfa diet until the green grass should come, believing that the hay ration would be as appropriate as the cereals.

Symptoms: Carpal and tarsal joints greatly enlarged and crooked, knots at the costo-chondral unions, face twisted, locomotion difficult, animal lies most of the time.

Treatment: Animal placed on a meat diet and allowed to

exercise at will. At the end of two months the animal showed considerable improvement.

Case II. Equine; black; ten years; gelding. *Diagnosis:* Immobilite; Dr. McCapes, of Boulder, in charge. *History:* A year ago the animal lost control of the hind legs.

Symptoms: Incoordination; atrophy of hips; interfering, irregular gait most noticeable upon backing.

Prognosis: Unfavorable. *Treatment:* Fowler's solution three drams a day, increasing the dose to one and one-half ounces a day, and then beginning the treatment over, starting with the small doses.

Case III. Equine; two years; gelding. *Diagnosis:* Sternal fistula; Dr. Charles Converse, operator.

History: Colt was hurt during breaking. *Symptoms:* Swelling over the region of the sternum, small wound discharging a little pus.

Treatment: Freely incised, wound explored for pieces of bone, none found, dressed with tincture of iodine and instructions given the owner to continue the iodine treatment.

Case IV. Equine; black; two years; male. *Diagnosis:* Ridgling; Dr. McCapes, of Boulder, operator.

Upon examination the testicle was fund in the inguinal canal.

Technique: An incision was made over the inguinal canal about three inches lateral to the scrotum, the testicle was delivered through the incision and emasculated. The left testicle was taken in the usual manner.

Case V. Equine; brown; twelve years; mare. *Diagnosis:* Contracted tendons; Dr. McCarrol, of Fort Collins, operator.

History: Of two years' duration. *Symptoms:* Perforans and perforatus contracted until the front of the foot touched the ground.

Operation: Tenotomy; adhesions were broken until the foot assumed a normal position.

Case VI. Equine; black; one month; female. *Diagnosis:* Metastatic arthritis; Dr. Watts, of Longmont, in charge.

History: Joints had been affected for three weeks.

Symptoms: Stifle joint capsule greatly distended, colt emaciated, unable to rise without assistance.

Treatment: Polyvalent bacterin. *Prognosis:* Very unfavorable.

Case VII. Bovine; black and white; nine years; female. *Diagnosis:* Panaritium; Dr. Gilgen, of Eaton, in charge.

History: Of two months' standing. *Previous Treatment:* Tubbing in hot bichloride solution, frequent application of kaolin cataplasmata.

Symptoms: Phlegmon about the coronet, open wound on the outside discharging pus, also a wound between the claws discharging pus; animal lies most of the time.

Treatment: Tracts were dressed with tincture of iodine, an autogenous bacterin was made and administered, case shows constant improvement. A report was given of cases similar to this that responded to bacterins where other lines of treatment had apparently failed.

Case VIII. Equine; grey; mare. *Diagnosis: Prescapular abscess.*

Operator: Dr. Charles Converse, of Castle Rock, Colorado.

Symptoms: Swelling slightly above and anterior to the point of the shoulder.

Treatment: Freely incised, permitting the escape of pus, dressed with tincture of iodine.

Case IX. Equine; black; seven years; female. *Diagnosis:* Quittor; Dr. Paxton, of Ouray, operator.

History: Of one year's standing. *Symptoms:* Fistulous tract over outside right quarter, discharging a little pus, considerable organization causing an enlargement about the quarter and coronet.

Technique: Tract opened and curetted, wound dressed with saturated solution of bichloride.

Case X. Bovine; black and white; nine years; male. *Diagnosis:* Actinomycosis; Dr. Ayres, of Sterling, operator.

History: Of several months' standing. *Symptoms:* Abscess about the size of a man's head in the intermaxillary space.

Treatment: Freely incised permitting the escape of a large quantity of thick, cream-colored, glassy pus; cavity dressed with tincture of iodine.

Case XI. Canine; white; six months; female. *Operation:* Ovariotomy; Dr. A. G. Fisk, Trinidad, operator.

Technique: Field shaved and painted with tincture of iodine; bitch was given 1 tab. H. M. C. Form. B.; incision made on the median line about 1½ inches, wound held open by means of a speculum; horns of uterus grasped with Noyes alligator ear forceps; ovary ablated with scissors; wound closed by a continuous peritoneal and subcutaneous suture.

Case XII. Canine; brown; one year; male. *Diagnosis:* Luxation of the femur; Dr. A. N. Carrol, Pueblo.

History: Hit by a motorcycle. *Symptoms:* Inability to support weight, increased mobility inward, limited abduction, entire limb rotated inward, pain upon pressure over the articulation, and some swelling.

Autopsy: No attempt was made to reduce luxation; the animal was killed and a dissection made of the parts. The articular head of the femur was found in front of the acetabulum, the ligamentum teres being ruptured. Dr. Carrol demonstrated an easy method of reducing such dislocations.

Case XIII. Equine; brown; one year; female. *Diagnosis:* Phlegmon; Dr. Kingman, Fort Collins, operator.

History: Colt injured six months previous by rolling into a gate. It is suspected that the periosteum was involved.

Symptoms: Suppurating induration over the lower third of the left cannon, ulcers the size of a dollar on inside and outside.

Treatment: Ulcers curetted, removing large quantity of connective tissue, bacterin prepared from the pus, the wound and leg dressed with tincture of iodine.

Case XIV. Equine; white; ten years; female. *History:* Seems to be deaf, goes to sleep standing.

Symptoms: Not well marked. Temperature 100.4 degrees F. Pulse and respiration normal. *Diagnosis:* None made.

Case XV. Bovine; Jersey; male. *Diagnosis:* Tuberculosis; Dr. Kingman, Fort Collins, in charge.

History: Bull had been given the subcutaneous test by a layman about a year previous to this test. Six months after the first test the bull reacted to the intradermal. At the time of the clinic showed reaction to both the subcutaneous thermal test and the intradermal.

I. E. Newsom, Secretary.

CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION.

The fifth annual meeting of the above association was held at Syracuse, N. Y., on June 25, 1914. Thirty members were present at roll-call and five visiting veterinarians, two of whom were applicants for membership.

The meeting was called to order with Dr. J. A. Pendergast, president of the association, in the chair. After the reading of the minutes of the last meeting and hearing the reports of the

various officers and committees, the applications for membership of Dr. W. M. Sullivan and Dr. Daniel O'Laughlin were taken up and favorably acted upon.

The report of the association's attorney, M. A. Switzer, Esq., of Fulton, N. Y., was then heard. It was shown that the association has now one action pending for illegal practice of the profession and several others to be instituted in the near future and as soon as conditions will warrant. The attorney was directed in behalf of the society to continue the work of prosecution of illegal practitioners.

Certain amendments to the by-laws were then taken up and favorably acted upon. These amendments, reading as shown below, authorize the accumulation of a fund for the protection of members of the association against actions for malpractice, and thus, it is believed, place this association in advance of any of the similar bodies of this or any other state of the Union. The amendments follow:

Amendment to Art. V. by adding thereto the following:

§ 5. Immediately following each annual meeting the treasurer shall pay over from the general funds of this association and deposit at interest in a duly incorporated savings bank to the credit of a special fund to be known as "The Central New York Veterinary Medical Association Special Fund" a sum equal to $1 for each active member remaining upon the rolls at the close of such meeting and such fund shall be used only, with the approval of the Board of Censors, for the expenses of the defense of actions against members for malpractice. If at any time such fund shall amount to the sum of $250, the interest therefrom shall be paid into the general fund of the association on July 1 of each year, and no further deposits shall be made to the credit of such special fund until it shall have been reduced to an amount less than $250.

Amendment to Art. VI. by adding thereto the following:

§ 4. Where an action for malpractice shall be brought against a member in good standing he may, upon releasing the control of his defense thereto to this association, apply, in writing and according to a form to be prescribed by the Board of Censors, to the secretary for protection. The secretary shall immediately call a meeting of the Board of Censors to be held within five days thereafter to investigate the fact and circumstances of the case, and if it is decided by them that such member has acted in good faith and has fulfilled his duty in relation

thereto as becomes a member of the veterinary profession, they shall direct the attorney of the association to proceed with the defense of such action. In the event that the association has at the time no regular attorney, the Board of Censors shall retain an attorney to be selected by them for the defense of such action. The expenses incurred in such defense shall be met from the special fund provided for in Art. V., sect. 5. If such fund is insufficient, the balance shall be paid from the general funds of the association.

For the purpose of insuring sufficient funds for the establishment of this work and for the proper continuation of the fight against illegal practitioners, the dues of the association were increased to five dollars per annum.

The following were elected directors for the ensuing year: Dr. W. B. Switzer, Dr. W. G. Hollingworth, Dr. J. M. Currie, Dr. R. M. Weightman, Dr. Frank Morrow, Dr. E. E. Dooling, Dr. J. G. Hill, Dr. Almond H. Ide, Dr. W. L. Clark. The directors elected the following officers: President, Dr. R. M. Weightman, Waterville, N. Y.; vice-president, Dr. E. E. Dooling, Syracuse, N. Y.; secretary-treasurer, Dr. W. B. Switzer, Oswego, N. Y.

An invitation was received from the president of the Genesee Valley Veterinary Medical Association to attend the meeting of that body at Rochester, N. Y.

The president's address was delivered by Dr. James A. Pendergast, president of the association, of Syracuse, N. Y. He reported the society to be in a very active and flourishing condition. Case reports were given by Dr. J. V. Townsend, Dr. R. M. Weightman, Dr. John K. Bosshart, Dr. C. R. Guile and Dr W. F. Burleigh. Dr. H. J. Milks, secretary of the New York State Veterinary Medical Society and a member of the faculty of the New York State Veterinary College, gave a most interesting address on skin diseases of the dog. Full discussion was had on each topic brought out in the reports and paper, whereby the members obtained much valuable information as to diagnosis, prognosis and treatment.

Preceding the business session, a clinic was held at the Infirmary of Dr. H. A. Turner in South Salina street. Median neurotomy was performed upon a bay horse for the relief of foot lameness by Dr. H. A. Turner, assisted by President Pendergast. A brown draft stallion, three years old, having a large umbilical hernia, for which an operation had been performed at

some previous time surgically, was operated upon by the ligation method by Dr. Frank Morow, of Utica, N. Y., assisted by Dr. J. M. Currie, of Rome. One of the most interesting of the operations was that performed by Dr. J. K. Bosshart, of Camden, N. Y., assisted by Dr. Currie, on a Jersey cow, age long forgotten, for the relief of supposed intestinal intussusception. A bay draft horse having a tumor of the shoulder caused by collar was operated on by Dr. W. B. Switzer, of Oswego, N. Y., assisted by Dr. W. L. Baker, of Seneca Falls, N. Y. Myotomy was performed upon a bay trotting mare for the prevention of switching by Dr. Frank Morrow, of Utica, assisted by Dr. Fitch, of Manlius.

Lunch was served at the Infirmary during the clinic and at the close of the meeting a banquet was served at the Hotel St. Cloud. W. B. Switzer, Secretary.

SCHUYLKILL VALLEY VETERINARY MEDICAL ASSOCIATION.

The twenty-first annual session of the above association was called to order on June 17, 1914, by the president, Dr. M. D. De Turk, at Reading, Pa.

The following members responded to roll-call: Drs. Fetherolf, De Turk (M. D.), Noack, Bieber, Dunkelberger, Berger, Huyett, Potteiger, C. R.; Kauffman, Reifsnyder, Fernsler, Longacre, W. S., and Kohler. Visitors were Drs. F. F. Massey and R. M. Staley, the former a physician from Wernersville and the latter an employee in the office of the Pennsylvania State Livestock Sanitary Board.

The minutes of the previous meeting were read and approved, after which a recess of fifteen minutes was declared for the payment of dues.

Among the communications read was one from the National Association Bureau of Animal Industry employees soliciting the united support of this association in securing the passage of these bills.

The secretary was instructed to draft resolutions, forward one to their representative secretary and also have a copy of same spread upon the minutes. The treasurer's report was received.

Under the Legislative Committee, Dr. Noack reported that a milk and meat ordinance had passed council at Allentown, but it

seems that the veterinarians of that locality were not equal to the opportunity, and hence a chemist and an assistant chemist were appointed, which is highly regretted, because they are incompetent to cope with all milk and meat problems.

Delegates to Pennsylvania Veterinary Medical Association.—Dr. Bieber reported that the attendance was somewhat blasted by a snow storm the previous day, which had incapacitated train service, although an interesting program was well discussed.

Election of Officers.—A motion was made by Bieber, seconded by Fetherolf that all the present officers be re-elected by acclamation. Carried; and the officers were declared re-elected.

A motion was made and seconded to adjourn for lunch.

Reconvened at 1.45 p. m., when the various papers were called for.

"*The Advantage of a Sanitary Milk House on the Farm*" was an exceptionally well-prepared essay, by Dr. C. R. Potteiger. Discussions were participated in by Drs. Fetherolf, Huyett, Staley, Noack and Kohler.

"*Disinfection and Sanitation,*" by Dr. D. R. Kohler. This paper curtailed all general antiseptics used in a practice. Dr. Staley opened the discussion by announcing that one of the safest methods of disinfection for hog cholera is the free use of a solution of sodü carbonas and hot water, followed by spraying with a lysol solution; again that one of the best methods to render a nail wound aseptic was to drop a few crystals of iodine and pour on some turpentine, after wound is well cut open, which penetrates to depth of wound. Tincture of iodine is also very effectual, although the veterinarian should always recommend and suggest to the owner the value of a preventive dose of anti-tetanic serum as a precaution to preventing tetanus.

It was the consensus of opinion among the members that a bichloride solution is not generally recommended for the use of disinfecting dairy stables, because bovines are susceptible to the influence of the drug.

"*The Relation of the Veterinarian to the Medical Profession*" by Dr. F. F. Massey, a noted physician of Wernersville, was the title of an able address.

He concluded that the veterinarian's and the physician's work was a comparison in a way, and that he trusts the feeling of both toward one another may always be amiable and that we, as professional brothers, should mingle more at such organizations, exchange ideas, so that we may be more able to cope better with the varied ailments afflicting men and animals.

"*Biorization of Milk,*" by Dr. O. G. Noack, was a subject which elicited much discussion.

This method of sterilizing milk, originating from Germany, is claimed to be far superior than the present method of pasteurzing; the process is quicker, better and more efficiently used.

Adjourned. W. G. HUYETT, Sec.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the above association was held at Boston, February 25, 1914. Sixty-eight members and guests were present. As honored guests there were present Dr. E. C. Schroeder, Superintendent of the Experimental Station of the Bureau of Animal Industry, Washington, D. C., and Dr. W. Horace Hoskins, professor of veterinary jurisprudence at the veterinary department of the University of Pennsylvania.

In the absence of President Perry, First Vice-President Beale occupied the chair and, after calling the meeting to order, announced that as we had some able speakers present, reading of the previous meeting's records would be deferred until later. Dr. Winchester then introduced Dr. Schroeder as the first speaker, who presented a most excellent paper on the subject of bovine tuberculosis, a transcript of which has been inserted in the present issue of the AMERICAN VETERINARY REVIEW for the benefit of members not present. In the conclusion, Dr. Schroeder was given a rising vote of thanks to which he fittingly responded. The president then introduced Dr. Hoskins as the next speaker, who took for his subject the Veterinary Army House Bill No. 4541, on which he spoke at some length, and strongly advised each member to appeal to his respective congressman for support to increase the efficiency of the army veterinary service; and as a result the president appointed Drs. Howard, Burr and Winchester as a committee to formulate and instruct the secretary to send forthwith to the chairman of the house committee on military affairs at Washington, the following:

"To Hon. JAMES HAY,

"Chairman, House Committee Military Affairs,
"Washington, D. C.:

"Dear Sir—The Massachusetts Veterinary Association in meeting assembled strongly urges the passage of House Bill No.

4541. The needs of greater efficiency in the Army Veterinary Service can only be obtained by the passage of this bill.

"(Signed) L. H. Howard,
J. F. Winchester,
Alexander Burr."

Dr. Hoskins also formulated and advised that in order to obviate delay, each member of the congress and senate be sent individual communications by the secretary, as follows:

"Dear Sir—The Massachusetts Veterinary Association, at their meeting in Boston, February 25, strongly approved of House Bill No. 4541, to increase the efficiency of the Army Veterinary Service.

"The fact that every other country of the civilized world has found this recognition requisite to the best and most efficient service, should appeal to you that our country should no longer be denied a service that under proper direction would be more mobile, more efficient by knitting together the various veterinary units of the present service, by the granting of rank and commission, the highest reward that governmental army service affords.

"Yours very truly,

"(Signed) W. T. Pugh, Secretary."

By request of the president, the secretary read the previous meeting's records, which were accepted as read. Dr. Howard then spoke of Dr. Osgood's unexpected death; also as being a man of personal worth, saying that thirty years ago to-night, Dr. Osgood presided at a meeting of this association, and on motion by Dr. Simpson, seconded by Dr. Howard, it was voted that the president appoint a committee of three to frame engrossed resolutions on his death.

Committee: Drs. Babson, Howard and Peters.

Adjournment at 7.40 p. m.

(Signed) W. T. Pugh, Secretary.

WASHINGTON STATE VETERINARY MEDICAL ASSOCIATION.

The sixth annual meeting of the above association was held in the rooms of the City Veterinary Hospital, Walla Walla, Wash., June 18 and 19, 1914.

It was not as well attended as some had hoped, though attendance was good and sessions highly interesting.

The veterinary situation in the city of Walla Walla is unique in that all the veterinarians of the city have their offices in one place. There are three of them, and the ample accommodations, splendid equipment and excellent team work were certainly gratifying to see.

The meeting place was in a large, well-lighted, well-furnished room beautifully decorated with flowers and pictures.

The designer of the hospital must certainly have had such occasions in mind when he planned the institution.

Dr. Nelson read a paper on *The Encouragement of the Live Stock Industry by the Veterinarians.* Several phases of his subject were discussed by men from all over the State. It was interesting to note that many had a preference for encouraging the dairy industry.

Dr. Seely read a paper on *Infectious Abortion.* To say that the paper was prepared in the doctor's usual splendid style bespeaks much for it.

Dr. Graves read a paper containing a preliminary draft of a proposed state livestock sanitary law, after which he called for suggestions from those present. The interest in this paper was very keen, many good suggestions being advanced, and no doubt that out of it will come a very excellent law.

Many other interesting subjects came up for discussion, but cannot all be covered in a report of this kind.

Outside of routine matters should be mentioned a trip to the State penitentiary. Here we were courteously met and conducted through the institution by a corps of guards, after which we were personally conducted over the farm by the warden who is an enthusiastic hog man. He has extensive hog yards and houses built after his own designing and the splendid animals he is producing indicate their efficiency.

The annual banquet at the Dacres Hotel was one long to be remembered.

The local men, Woods, Trippeer and Baddeley, certainly outdid themselves there.

The clinic was the crowning feature of the occasion. With fifteen listed subjects, besides cases brought to the hospital incidentaly during the convention, it will easily be seen why some of the routine business and papers were nearly crowded out.

It was preeminently a practitioners' meeting and, of course, clinics were highly interesting.

At ten o'clock on the third day, when the secretary was obliged to leave, the clinic was still in progress, with ten or twelve devoted ones still busy.

The next meeting is to be held in North Yakima in June, 1915.

The officers for the coming year are: President, J. T. Seely, Seattle; Vice-President, R. Prior, North Yakima; Secretary-Treasurer, Carl Cozier, Bellingham.

CARL COZIER, Secretary-Treasurer.

MAINE VETERINARY MEDICAL ASSOCIATION.

The July meeting of the M. V. M. A. was held at Rockland on the 8th. Meeting called to order by the Vice-President Dr. C. W. Purcell at 8 p. m., as the President, Dr. H. B. F. Jervis, was called to England by the death of his father.

After roll call the minutes of the April meeting were read and accepted.

Visitors present: Dr. G. W. Makie, of Parke Davis & Co.; Dr. P. R. Baird, of Waterville; and Mr. E. S. Cooper, of the Abbott Alkaloidal Co.

Communications: A communication was received from the veterinarians employed by the Bureau of Animal Industry asking the association to indorse a bill that they have before the House of Representatives and the Senate. The association voted that the president should appoint a committee of three to draw up a set of resolutions endorsing this bill. Dr. Purcell appointed Drs. W. H. Robinson, W. L. West and A. Joly on this committee.

The secretary's report from April, 1913, to April, 1914, was read and turned over to the auditing committee, which reported later that they found the report correct and it was accepted.

Papers: Dr. W. H. Lynch read a paper on *Indolent Bovine Placentae*. This paper was very interesting and brought forth much discussion. Drs. C. F. Davis, C. W. Purcell, C. L. Blakely, F. W. Huntington, W. L. West leading the discussion while Dr. Lynch ably defended his paper.

Dr. C. F. Davis read a paper on *Pyo Septicemia of Sucklings*. This paper was discussed by Drs. W. L. West, C. L. Blakely, W. H. Lynch, I. L. Salley and others present joined in the discussion.

The applications of Dr. Haven T. Paul, of Portsmouth, N. H., and Dr. P. R. Baird, of Waterville, Me., were read and

referred to the executive committee. The report on these two applicants to be presented at next meeting.

Next meeting to be held at the DeWitt Hotel, Lewiston, Oct. 14, 1914. Meeting adjourned at 10 p. m.

A shore dinner was served at Oakland Park at 6 p. m. Dr. H. L. Stevens had charge of the arrangements for this delightful repast. Those seated at the tables were Dr. F. W. Huntington, Dr. C. W. Purcell, Dr. C. F. Dwinal, Dr. W. H. Robinson, Dr. H. B. Westcott, Dr. C. F. French, Dr. W. H. Lynch, E. E. Russell, I. L. Salley, Dr. A. Joly, Dr. C. F. Davis and wife, Dr. G. W. Makie, Dr. A. W. Peabody, Dr. H. L. Stevens, Mr. E. S. Cooper, Dr. M. E. Maddocks and Mr. G. H. Davis and wife. After the dinner the party trolleyed back to Rockland, where they arrived shortly before 8 o'clock.

After the meeting an informal smoker meeting was held and Dr. G. W. Makie and Mr. E. S. Cooper gave very interesting talks. A vote of thanks was extended Dr. H. L. Stevens for his services rendered on the entertainment committee in furnishing such a good time. H. B. Wescott, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular monthly meeting of this association was held in the lecture room of the New York-American Veterinary College, on Wednesday evening, June 3, 1914.

The president and vice-president being absent, Dr. R. W. Ellis was asked to take the chair, and presided.

The minutes of the May meeting were read and approved.

Dr. E. B. Ackerman reported for the Committee on Public Watering Troughs, and said that the hearing on this subject had been postponed by the Board of Aldermen for about ten days. Numerous conferences have been held on this subject, and it is expected that everything will be settled in a satisfactory manner. Dr. Ackerman also spoke in favor of the Army Bill, and offered a resolution endorsing the bill, and instructing the secretary to write our state senators urging their support.

Dr. Griessman reported for the prosecuting committee.

Messrs. Whalen and Ellis, of the Norfolk and Western Railway, then gave an illustrated lecture on the Luray Caverns, Natural Bridge of Virginia, and other points of interest in the South.

This was enjoyed by the members and visitors present, and a unanimous vote of thanks was extended to Messrs. Whalen and Ellis. An odd pathological specimen sent in by Dr. Wm. H. Gribble, of Washington Court House, Ohio, was then exhibited for examination. This was supposed to be the testicle of a dog, but, on examination, Dr. W. Reid Blair reported that fibrous tissue had replaced all the testicular tissue.

Dr. Ellis reported the recent death of Dr. Chas. Jamieson, chairman of the prosecuting committee, and appointed as a committee to draft suitable resolutions Drs. Cochran, Berns and Ackerman.

Mr. Morse, who was present, stated that he was a licensed and bonded detective and asked the privilege of the floor. On motion, duly seconded and carried, his request was granted.

Dr. Chase, president of the Alumni Association, announced that the annual meeting would be held in the college building June 10, 1914, at 11 a. m., and the banquet the same evening at the New York Athletic Club.

Dr. Ellis appointed as delegates to the International Veterinary Congress at London Drs. W. Reid Blair and E. B. Ackerman.

Also appointed Drs. Geo. H. Berns, D. W. Cochran and Maffitt Smith as delegates to the annual meeting of the New York State Veterinary Medical Society at Rochester.

Dr. Ellis announced that a number of the delegates to the International Congress would sail on the steamer "Finland," Saturday, June 13, and asked as many as could do so to go to the pier and wish them *bon voyage*.

No further business appearing, the meeting adjourned to meet the first Wednesday in October.

ROBT. S. MACKELLAR, Secretary.

DR. MEADOR BECOMES ASSOCIATED IN THE CATTLE BUSINESS.—Dr. D. J. Meador, assistant state veterinarian of Alabama, has left Selma to become associated with his father and brother in the cattle business at Myrtlewood, that state. We congratulate his father and brother, as we consider it quite an acquisition to a live-stock business to have a veterinarian so closely interested in it. In a recent letter from the doctor, he says in conclusion: "I will still continue in practice, and would not want to miss the REVIEW."

NEWS AND ITEMS.

Dr. Cheney Goes to Twin Falls.—Dr. A. H. Cheney, Miles City, Montana, has gone to Twin Falls, Idaho. We wish the doctor success in his new field.

Dr. Jervis Returns.—We had the pleasure of a short visit with Dr. H. B. F. Jervis, of Houlton, Maine, on his return from England on July 17, where he had been called through the death of his father.

Pre-eminently a Practitioners' Meeting is Secretary Carl Cozier's opinion of the recent Washington State meeting at Walla Walla. Read his interesting report of it on page 595 of the present issue.

Dr. W. H. Skerritt Has Gone to Michigan.—Dr. W. H. Skerritt, son of Dr. H. W. Skerritt, Utica, N. Y., has gone to Mt. Clemens, Michigan, and become associated in practice with Dr. Ewald of that place.

A Most Interesting Report of the May meeting of the Colorado Veterinary Medical Association, by Secretary Newsom, appears on page 585 of this issue. The doctor's report of the clinic includes fifteen case reports.

Can't Do Business Without the Review.—Dr. W. D. Bennett, Batavia, N. Y., writes: "Enclosed please find check for renewal to the Review. I can't do business without the American Veterinary Review. Accept my hearty thanks."

Made State Veterinarian for the Sixteenth Time.—On June 30 Dr. J. S. Pollard, of Providence, R. I., was re-elected state veterinarian for the sixteenth consecutive time. Dr. Pollard is a graduate of the Ontario Vet. College, class of '98.

Connecticut Veterinary Medical Association will hold its summer meeting on August 4th in Waterbury. Clinics, medical and surgical, will be held at Dr. A. T. Gilyard's hospital. Secretary Dow is determined to put the Connecticut meetings in Class A.

President of Maine Veterinary Medical Association Suffers Bereavement.—Dr. H. B. F. Jervis, Houlton, Maine, was called to England early in July through the death of his father, whose home was in Great Britain. He has the sympathy of his professional brothers.

The Best Journal There Is—Helps Him Bear His Injuries More Cheerfully.—Dr. S. S. Wertz, Kensaw, Nebraska, writes: "Enclosed find check for the best veterinary journal there is. Would have remitted sooner but have been in a hospital all winter. Got my right collarbone fractured and it punctured my lung. Also had four ribs fractured on my right side. Hope to be able to work from now on, with the aid of the Review."

Administrative Control of Glanders is the title of a bulletin by Dr. E. B. Ackerman, Chief Veterinarian of the Department of Health of the City of New York, published by the department. This bulletin of 13 pages, covering the administrative methods of control, is dated April, 1914, just three months after Chief Ackerman assumed the direction of the veterinary work in the Bureau of Infectious Diseases. The doctor's activity is deserving of commendation.

Drs. Skerritt and Morrow is the firm name under which Dr. H. W. Skerritt, of Utica, N. Y., and Dr. F. Morrow, formerly of Oneida, that State, have formed a partnership, with headquarters at 317 Columbia street, Utica. These men were classmates and roommates while taking their veterinary courses twenty-five years ago; since which time they have both practised their professions constantly, Dr. Skerritt at Utica and Dr. Morrow at Oneida. We wish them success in their co-partnership.

Improvement Shown From Year to Year.—Dr. W. G. Clark, Resident Secretary for Wisconsin, A. V. M. A., Marinette, Wisconsin, in renewing subscription, writes: "Enclosed please find check for $3, renewing my subscription for the ensuing year. I wish to congratulate you on the periodical that you have published during the past year and the improvement that is shown from year to year. I feel that I am in a measure qualified to judge as I have a complete bound file from volume 16."

Economy Will Keep the Work Horse with Us.—The work horse does not need sentiment to maintain his position; his valuable service in the world's activities is more appreciated to-day than ever before. This is the age of economy, and level-headed business men who have had years of experience with horses in their business are realizing that no more economical motor than the horse can be found. Economy is stamped right on him and shows out strongly by comparison with the complicated, expensive, mechanical devices that man has attempted to substitute for him. The horse increases 30 per cent. in value during the time it usually takes to wear a motor truck out.

Patent Medicine Tax in Japan.—According to investigations made by the Sanitary Bureau of the Home Department the total revenue from the patent-medicine tax (paid by dealers on the amount of sales) for 1912 amounted to $116,900 gold, a decrease of $5,000 from the preceding year. The revenue derived in 1912 from the sale of stamps on patent medicines amounted to $1,119,600, an increase of $57,400 as compared with the preceding year. As the value of the stamp represents 10 per cent. of the market price of the medicines, the total value of patent medicines consumed in 1912 was $11,196,800, equal to $0.216 per capita of population of Japan, showing an increase of $0.085 on the figures for the preceding year.—(*American Association of Pharmaceutical Chemists.*)

Perpetuating the Horse Interest on a Solid Foundation.—History has demonstrated that the sure way of perpetuating patriotism is by teaching it to the children. It is therefore gratifying to see the "youngsters"—boys and girls—taking such an active part in the horse shows—more especially the outdoor country horse shows—where they ride many of the mounts and also do some driving. Of course these children are the offspring of parents whose interest in the development of the horse is keen; but it is through their encouragement that the children acquire and cultivate that interest which is just as sure to redound to the perpetuity of the development of the horse as that the teaching of patriotism to the children has maintained and increased that noble qualification in them down through many generations. We cannot commend too highly this practice of having the boys and girls take active parts in the horse shows, and are gratified to see this feature becoming more and more general.

Veterinarian Goes into Politics—A Many-Sided Man.—Dr. Thos. E. Robinson, of Westerly, R. I., has entered the political field, having been elected councilman for the town of Westerly, defeating his opponent by a very large majority. The genial doctor has been located in Westerly for a number of years and enjoys a very lucrative practice, being the only veterinarian in town. As Westerly is the dividing line between Connecticut and Rhode Island, Dr. Robinson has the distinction of acting as assistant in his county to State Veterinarian J. S. Pallard of R. I., in the work of testing horses for glanders. He also assists the Connecticut Commissioner on Domestic Animals in the same line of work for animals entering Connecticut. For a number of years the doctor has acted as veterinary judge to the Newport and Narragansett Pier horse shows, is at present veterinarian to the Point Judith Country Club, and is treasurer of the R. I. Vet. Med. Assn. and holds the same office for the R. I. Board of Vet. Examiners, was formerly resident secretary for the A. V. M. A.

Proposed Georgia Cocaine Law.—H. B. 885, by Messrs. Swift, Wohlwender and Slade, incorporates a proposed Cocaine Law identical with the present New York Cocaine Law. It provides, among other provisions:

1. Sales at retail are restricted upon the written prescriptions of *physicians only.*

2. The retail druggist must give to the purchaser a certificate indicating:

 a. The name and address of the seller.
 b. The name and address of the prescribing physician.
 c. The date of the sale.
 d. The amount sold.

3. It is expressly provided that physicians may dispense, after a personal examination of the patient, provided the certificate required of the retail druggist (see 2, above) is given to the patient. A violation of this provision is a felony.

4. Physicians, dentists, veterinarians and retail druggists may buy direct from the manufacturer or wholesaler at wholesale upon a written order, provided such sales are duly recorded and proper labels used.

5. Physicians, dentists, veterinarians and retail druggists may not have on hand more than 1⅛ ounces.

6. Physicians, dentists and veterinarians must record, at least once in six months, the gross amount dispensed.

TIDINGS FROM THE SECOND PARTY OF OFFICIAL TOUR.

(From the REVIEW's Staff Correspondent on Board the St. Paul.)

On Board SS. St. Paul, July 17, 1914.

Editor AMERICAN VETERINARY REVIEW:

This is our last day out. We expect to arrive at Cherbourg to-night. Eight days ago we left New York, some gay and smiling, some otherwise, but all anticipating an experience at sea and sights of the old countries. We had scarcely taken our last look at the city of high buildings when our experiences began. (Also saw sights in dark corners.) Our first experience was a fog so dense that our pilot boat was lost and another had to be sent out to return our harbor pilot. This information, with the continued systematic sounding of the steamer's whistle, deterred many from going below; but troubles other than nautical were ever arising. A party of southern girls were so fascinating that many of the younger members of our party threatened desertion to follow the trail of soft voices, let it lead where it would. No sooner had we our party corralled than John Blattenburg became a problem. Not content with three trunkfuls of hot and cold toggery that would have been the envy of any ladies' man, he had added to his wardrobe a complete feminine attire, and when from sheer exhaustion he had to abandon *making love,* he donned his shimmery garments and coquetishly received the embraces of the stronger sex. Our troubles, however, were greatly lightened by the behavior of the weather and the sea. We soon got our sea legs and passed as old sailors.

We hope to join the party that preceded us at Utrecht, and the one that sails later at London.

Yours truly,

J. F. DEVINE.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n.....	Mar. 5-6-7, 1914	Auburn.....	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.....	June 10, 1914.....	141 W. 54th St..	P. K. Nichols, Port Richmond, N.Y.
American V. M. Ass'n.....	Dec., 28-31, 1914	New Orleans, La	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n.....	January 5-6, 1915 ...	Little Rock....	R. M. Gow, Fayetteville.
Ass'n Médécale Veterinare Française. "Laval".....	1st and 3d Thur. of each month.....	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. each month..	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha.....	3d Mon. each month.	S. Omaha, Neb..	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n.....	Monthly.....	St. Joseph.....	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n.....	December 10, 1913..	San Francisco...	John F. McKenna, Fresno.
Central Canada V. Ass'n.....	Feb. and July.....	Ottawa.....	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n.....	June and Nov.....	Syracuse.....	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. each month	Chicago.....	D. M. Campbell, Chicago.
Colorado State V. M. Ass'n.....	January, 1914.....	Denver.....	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n.....	Aug. 4, 1914.....	Waterbury.....	B K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan., Apl., July, Oct..	Wilmington.....	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.....	3d Mon. each month.	Newark, N. J....	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	2d week, July, 1913..	Rochester.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 22-23, 1913.....	Atlanta.....	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.....			Louis P. Cook, Cincinnati.
Illmo Vet. Med. Ass'n.....	July 17, 1914	E. St. Louis....	L. B. Michael, Collinsville. Ill.
Illinois State V. M. Ass'n.....	July 15, 1914.....	Springfield.....	L. A. Merillat, Chicago.
Indiana Veterinary Association.....	Jan. 14, 1914.....	Indianapolis...	A F. Nelson, Indianapolis.
Iowa Veterinary Ass'n.....	Pending.....	Pending.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n.....	Jan. 6-7-8, 1914.....	Manhattan.....	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb.each year	Lexington.....	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	2d Tues. each month.	Philadelphia....	Cheston M. Hoskins.
Lake Erie V. M. Association.....	Pending.....	Pending	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n.....	Sept., 1914	Lake Charles...	Hamlet Moore, New Orleans, La.
Maine Vet. Med. Ass'n.....	July 3, 4, 1914.....	Houllon.....	H. B. Wescott, Portland.
Maryland State Vet. Society.....		Baltimore.....	H. H. Counselman. Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. each month.	Young'a, Boston.	W. T. Pugh, Southbridge.
Michigan State V. M. Ass'n.....	Feb. 3, 4, 1914.....	Lansing.....	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n.....	July 8-9, 1914	Northfield.....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.....	1914.....	Vicksburg	J. D. Townsend, Louisville.
Missouri Valley V. Ass'n.....	Jan. 27, 28, 29, 1914	Kansas City,Mo.	Hal. C. Simpson, Denison, Ia.
Mississippi Valley V. M. Ass'n.....	Semi-Annually.....	Galesburg, Ill...	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n.....	July, 1913.....	Kirksville.....	S. Stewart, Kansas City.
Montana State V. M. A.....	Sept. 24, 25, 1913.	Helena.....	A. D. Knowles, Livingston.
Nat'l Ass'n B. A. I. Employees.....	2d Mon. Aug., 1914.	Denver, Colo...	S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Nebraska V. M. Ass'n.....	1st Mo. & Tu.,Dec.'13	Lincoln, Neb...	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.....	August 11-12-13,1914	Rochester.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June 23, 1914	Wilson.....	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n.....	Week of July 20, 1914	Fargo.....	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.....	Nov. 1913.....	Delphos.....	E. V. Hover, Delphos.
Ohio State V. M. Ass'n.....	Jan. 14, 15, 1914,...	Columbus.....	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.....	Annually.....	Upper Sandusky.	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.....			J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Fall, 1913.....	Oklahoma City..	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	1st Week in Feb.1914	Toronto.....	L. A. Willson, Toronto.
Pennsylvania State V. M. A.....	Mar. 3, 4, 1914.....	Philadelphia....	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President....	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. each month.	Portland, Ore...	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.....		Mon. and Que...	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June.....	Providence.....	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns....	Pending.....	Pending.....	B. K. McInnes. Charleston.
South Illinois V. M. and Surg. Ass'n..	Aug. 4-5-6 1914.....	Salem.....	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors.....	1st Wed. fol. the 2d Sun. each month..	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	Dec. 16, 1914.....	Reading.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....		Philadelphia....	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.....	Pending.....	Madison	S. W. Allen, Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.	Jan.. Apl., July, Oct..	Los Angeles.....	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp...	4th Tues. each month	407 Illinois Ave.	H. R. Collins, South St. Joseph.
Tennessee Vet. Med. Ass'n.....	November. 1914....	Nashville.....	O. L. McMahon, Columbia.
Texas V. M. Ass'n.....	Nov., 1913.....	College Station..	Allen J. Foster, Marshall.
Twin City V. M. Ass'n.....	2d Thu. each month..	St. P.-Minneap..	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Spring of 1914.....	Salt Lake City..	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n.....			G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. each month	514 9th St., N.W.	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ...	1st Sat. each month	Wash'ton, D. C.	J. M. Cashell, 2115 14th Street.
Vet. Ass'n of Manitoba.....	Feb. & July each y'r..	Winnipeig.....	Wm. Hilton, Winnipeg.
Vet. Med. Ass'n of N. J.....	July 9, 1914.....	Montclar.....	E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City.....	1st Wed. each month.	141 W. 54th St..	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City.....	T. F. O'Dea Union Hill, N. J.
Virginia State V. M. Ass'n.....	July 9-10 1914.....	Staunton.....	Geo. C. Faville, North Emporia.
Washington State Col. V. M. A.....	1st & 3d Fri. Eve....	Pullman.....	R. J. Donohue, Pullman.
Washington State V. M. A.....	June, 1915.....	Yakima.....	Carl Cozier, Bellingham.
Western N. Y. V. M. A.....	June 24, 1914.....	Buffalo.....	W.E.Fritz,358 Jefferson St.,Buffalo
Western Penn. V. M. Ass'n.....	3d Thu. each month..	Pittsburgh.....	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad.....	Feb. 10, 11, 1914....	Milwaukee.....	W. W. Arzberger, Watertown.
York Co. (Pa.) V. M. A.....	June, Sept.,Dec.,Mar	York.....	E. S. Baustiicker, York, Pa.

PUBLISHERS' DEPARTMENT.

Subscription price, $3 per annum, invariably in advance; Canadian subscriptions, $3.25; foreign countries, $3.60; students while attending college, $2; Students in Canada, $2.25; single copies, 30 cents in U. S. **Copy for advertisements should be received by 10th of month.**

Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address. **Make all checks or P. O. orders payable to American Veterinary Review.**

A Cordial Invitation.—The H. K. Mulford Company extend a cordial invitation to all veterinarians to visit their biological laboratories and become acquainted with their methods of preparng biological products. See their announcement on page 15 (adv. dept.) of this issue and write them for full particulars on their Opthalmic Mallein and Tuberculin and the immunizing White Scour Serum. Be sure to mention the Review.

Something New.—Under this heading will be found listed on page 11 (adv. dept.) of this issue, *Calcium Sulphide* in 30-grain tablets. The preparation is not new (it has been tried and *not* found wanting this many years), but the size tablet is new. *Chloral Hydrate*, another old remedy in new *form*. No one will dispute that chloral hydrate in tablet form is *new*. Each tablet contains 60 grains. *Ethyl Chloride* (Abbott) in 50 gram tube. *Methylene Blue*, in coated tablets. New treatment for contagious abortion. *Phytolaccoid* in uncoated tablets. Indicated in inflammation of the mammary gland, and finally *Salicylic Acid* in uncoated 30-grain tablets. Used not only in rheumatism, but in bloating and flatulent colic. Look these up on advertising page referred to above, and when writing the Abbott people for detailed information in regard to them, ask them about the *Emphysema Compound* for heaves in horses and mules, and be sure to mention the Review when writing.

AMERICAN VETERINARY REVIEW.

SEPTEMBER, 1914.

EDITORIAL.

EUROPEAN CHRONICLES.

BOIS JEROME BY VERNON (EURE.), August 15, 1914.

TENTH INTERNATIONAL VETERINARY CONGRESS—Exactly two weeks ago our confrères from all over the world were slowly gathering towards London for this great event and to celebrate the tenth anniversary of the creation that the veterinary profession owes to Professor John Gamgee.

Two weeks ago a terrific alarm spread all over Europe, a frightful threat of war, in which the six largest countries of the old world were to take place, resounded.

The whole of Europe was mobilizing their various armies!

Feast of peace in England; terrible prospect of war on the continent!!

To-day as I send this chronicle, which may be arrested on its way to America, I am away from the terrible spasm which shakes the entire European world and I am ignorant of what takes place around me. Of the tenth international veterinary congress I cannot give any news.* I have none. I cannot get any, no matter how my plans have been arranged.

I have, however, great pleasure in sending some little information, which will bring some joy to few at home.

The two parties of American veterinarians that crossed the big pond to attend the congress arrived safe in Paris. Al-

* See complete report of Congress on page 694; and story of European tour on page 678.

though they were separated, they both called at the various places of interest that Dr. Eichhorn had arranged for his trip, Alfort, Pasteur Institute, visited at Garches, the great laboratory of all the Pastorian preparations, etc., etc. At Alfort they were the object of a great reception and their visit most complimentarily alluded to in the French professional paper, the *Recueil.*

Personally I had the ever to be remembered call of two of the gentlemen of the party that left New York on the *St. Paul,* Drs. Ackerman and Mayo. It was to me a consoling satisfaction, being kept away from the congress. To both I again send thanks for their coming here.

I hope that all our confrères have had no trouble to go home and that their sojourn in London has been as pleasant as I am certain it must have been from a scientific point of view.

*
* *

Paris, July 15, 1914.

Rachianesthesia.—The subject of *rachianesthesia in small domestic animals* (dogs and cats) has been the subject of reviews, first in the *Journal de Zootechnic* and then in the *Bulletins de la Société Centrale.*

In veterinary medicine, especially with those animals, general anesthesia is sometimes dangerous, particularly in old subjects; hence the indications for resorting to regional anesthesia, which fulfills all the requirements.

In 1898 Sicard injected cocaine in the sub-arachnoid space of the lumbar region. His modus operandi was complicated and not practical. The same year Bier obtained similar results by injection on a level with the lumbo-sacral space. His method gave excellent results and found its application for all operations involving the hind quarters of the animal—and also the thorax and forelegs when the injected dose was large.

Two years later Cuillé and Sandrail made the injection in

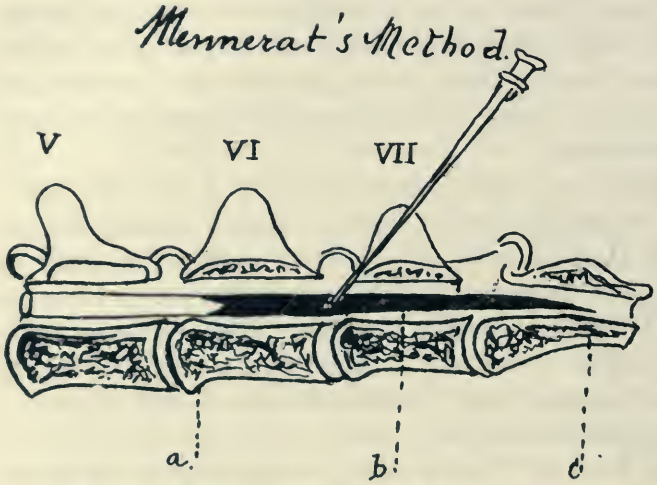
the lumbo-sacral space, at the intersection of a line uniting the iliac angles from their junction with the median plane of the body. They introduced the needle perpendicularly, slowly and gradually. Two drops of cephalo-rachidian fluid escaping through the trocar.

Great flexion of the vertebral column assists the introduction of the needle. Then Messrs. E. and L. Lepinay selected for suitable place of puncture the sixth interlumbar space, on the median line, following the anterior border of the spinous process of the seventh lumbar vertebra. This is, according to Cadeac, a dangerous method on account of the great difficulty to enter the rachidian canal. It demands a great deal of practice and a thorough manipulation.

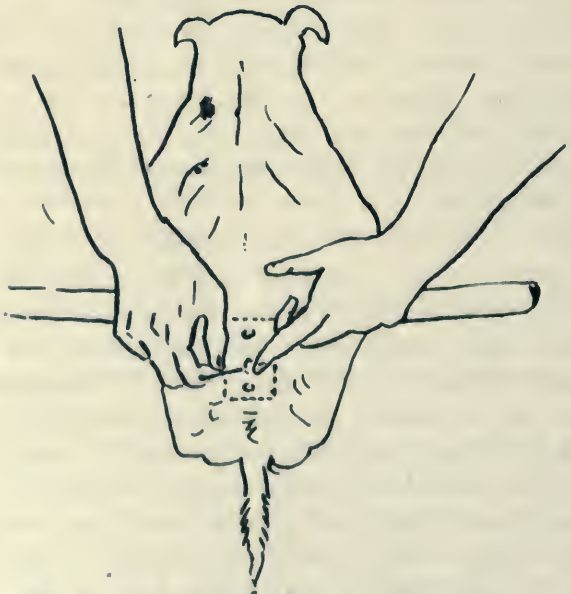
Another method is presented by a fourth year student of Alfort, Mr. Mennerat which has been the object of a long report before the Société Centrale by Prof. Coquot.

Mennerat performs the puncture between the sixth and seventh lumbar vertebra, but instead of introducing the needle on the median line, he pushes it *on the side of the spinous process* of the seventh vertebra and necessarily there reaches in the dural sac, whose diameter there corresponds sensibly to that of the vertebral foramen.

To operate Mennerat places his subject on a table in the sterno-abdominal position, the hind quarter hanging on one of the borders of the table, the hind legs are brought forward and tied together above the hocks. In this position the lumbo-sacral region is perpendicular to the ground. When all surgical preparations are completed, the needle is introduced obliquely from above to below, from backwards forwards, from outside inwards. It is pushed in slowly, passing through the skin, lumbar aponeurosis, long dorsal muscle, inter-lamellar ligament, and finally the dural sac. Rarely does cephalo-rachidian fluid appear, but as the point of the needle may irritate without hurting some of the final ramifications of the cord, the animal will struggle some. This is an indication that the needle is in good position and that the injection can be made.



a - End of the cord - b - End of dural sac - c, dural sac.



Puncture - 4th lumbar vertebrae.

The anesthetics used in latter years are cocaine, stovaine novocaine and Tropa-cocaine. Dr. Corning, of New York, has

used a mixture of Tropa-cocaine and suprarenine. Mr. Mennerat has experimented his method with cocaine, stovaine and novocaine and he has obtained excellent results.

The doses, modus operandi and length of duration of the anesthetic effects are known to our readers.

The applications of Mennerat methods for the rachianesthesia of cats are very similar to those resorted to for dogs.

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Antituberculous Immunity.—In their April issue, the *Annales de l'Institut Pasteur* contains several communications of great interest.

Prof. A. Calmette and C. Guerin have one contribution to the study of *antituberculous immunity* of bovines, in which they relate the experiments they have made with the constituting elements of the bacillus of Koch, viz.: The lipoids, tuberculines and bacillar protoplasm, in relation with the immunity. The conclusions of these experiments are resumed as follows:

1. Lipoids, soluble in boiling acetone and benzine, extracted from the tuberculous bacillus, have no preventing action.

2. (Brute or precipitate) tuberculines, such as are ordinarily prepared in laboratories have a certain action, but it is reduced to a simple lowering in the duration of the evolution of the infection.

3. Bacilli killed by heat, taken from ordinary cultures on glycerinated media, have a weak preventive power, which results from the small quantity of tuberculine held by them or detained in the microbian bodies.

4. The intact bacillar protoplasm, from dead bacilli free from tuberculine, is without any immunizing action.

5. The lasting endurance of bovines towards tuberculous infection is function of the presence of living bacilli in the organism of these animals. The saprophytic life of the tuberculous bacillus in the economy invites the elaboration of immuniz-

ing soluble products, different from those obtained artificially in the media of culture.

* * *

In the same number of *Pasteur's Annales,* there is the record of an experimental study on the *cenurosis of rabbit,* by Profs. Henry and Cinca; on the *cocobacillus of locust,* by Dr. T. d'Herelle; on *trials* made for their extermination; and on *experimental researches* made on a therapeutic method based on the stimulation of phagocytes, by T. Yamanouchif, and finally one on the *influence* of lecithine and cholesterine upon the toxicity of eggs and of the ovaries, by Dr. Henri Vignes.

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In the *Presse Medicale,* Prof. E. Marchoux has an article on the *Lepra of Rats,* which from the point of view of comparative pathology is of great interest. Alluding to the difficulties presented in the experimental study of human lepra, and referring to the discovery of Armauer Hansen, who in 1868 gave his name to the bacillus which by many has been accepted as the specific germ of the disease in the human being, Marchoux has made a study of lepra in rats and found it the image of that of man, as far as symptoms, pathogeny, march and termination.

A physician of Odessa in 1903, Dr. Stefansky, in examining every day a great number of rats, discovered in sewer animals a new disease, caused by an acido-resisting bacillus, which multiplied in great quantity in the lymphatic glands and under the skin of these animals. The disease almost special to the *Mus. norvegicus,* is as common as the rodent is.

The disease presents itself under two forms, one essentially glandular and the other musculo-cutaneous. This last is a more advanced stage of the first.

The glandular form, the most common, is not manifested outside of the body by any sign and discovered only as a surprise

of post mortem. The lymph glands are often enlarged, hard, whitish and may reach large dimensions. It is not, however, a typical symptom, as infected rats may also have relatively small glands and again healthy rats may have large ones. All the glands of the body may be attacked or again only a few.

The musculo-cutaneous form is more rare. The animals are cachetic, move with difficulty and allow themselves to be caught with the hand. The skin is thick, bosselated, very adherent to the tissues underneath. It presents nodules of dimensions which vary up to that of a pigeon's egg. These are more specially localized on the head, the external face of the legs and the flanks. Besides these neoplasic formations there are alopecio patches of various sizes. The skin is often ulcerated. In the internal organs there are no macroscopic lesions well marked, with the exception in some cases of small whitish nodosities on the peritoneum, the liver and the spleen; some rats become blind.

* * *

After this concise description of that murine lepra, Marcoux continues by the examination of the pathological anatomy, the study of the pathogenous agent, the bacillus of Stefansky, the etiology, the transport of the germs by parasites, lice, fleas and acarians. He examines the subject of the contamination through the mucous, considers the benignant and malignant forms of the disease and finally arrives at his conclusions.

"From the study of murine lepra may be derived a certain number of conclusions which could be applied to the similar disease which affects human beings. The analysis of the facts obtained to this day, do not show any disaccord with our experimental observations, on the contrary they corroborate them very happily."

"To resume, we are authorized to say that: 1. The specific bacillus is a delicate germ. 2. It is frequently inoculable to subjects which are sensitive to it. 3. Stinging insects do not transport the disease. 4. Sarcoptes, demodex and flies may play

an accessory part. 5. The germs ordinarily enter the organism through a skin abrasion, coming in contact with septic products. 6. Healthy and sound preputial mucous membrane allows the virus to enter. 7. Lepra that can be diagnosed clinically is rare when compared with the mild disease. 8. This last can remain unknown until death takes place. 9. It may get well spontaneously. 10. It is transformed into manifest lepra by the influence of secondary infections or of physical running down of the organism. 11. The hygienic treatment, applicable to tuberculous subjects, is the one for leprous. 12. Prophylaxy consists in avoiding any soiling of the skin of healthy individuals by specific germs."

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Water in Veterinary Practice.—There is no doubt that water in all the peculiar conditions it may be used does occupy in veterinary practice an important place, a place which for some is considered as an abuse. Such is the case with Doct. Fontaine, an army veterinarian, who in the *Revue Veterinaire Militaire* has recorded the very complete history of the studies he has made on the subject and considered all the cases in which water is used in veterinary medicine.

In surgical practice, asepsy is realized by boiling the instruments, by washing the hands with sublimate solution, 1/1000, by an application of tincture of iodine or iodided chloroform, 1 to .20—, to the field of operation. Surgical wounds are protected with a dry dressing.

In the washing of wounds, the abuse of water is dangerous. In case of recent traumatism, if it is done carelessly, it becomes a cause of infection; a simple application of tincture of iodine or of aloes is sufficient, followed by a protecting envelope, if the region permits it; an absorbing powder will also allow the isolation of the wound from the outside.

In cases of anfractuous wounds, cleaning with a douche is followed by warm solution of sublimate of 1/1000 and a moist wadding dressing.

With a wound on the road to cicatrization, washings are improper. After evacuation of the pus, an absorbing powder or finely cut tourbe wadding, will form a crust under which cicatrization will be obtained. Sterilized antiseptic ointments, in tubes, are not yet used in general practice.

Moist dressing with water at 40 degrees and used as reducing the congestion and acting as sedatives, give good results.

The author treats foot injuries, as those of other regions, with a dressing but he excludes baths.

The simply hygienic use of water gives also room for abuses. It often promotes superficial inflammation of the dermis. The soaking of the feet is less used and warm foot baths at 40 degrees are used in lameness due to congestion.

Continued irrigation is used only exceptionally, as it requires great watching and seems to arrest the cicatrization of large wounds.

Aqueous solutions are inefficacious in the treatment of cutaneous affections and may promote the generalization of those diseases.

Finally, general balneations used in the treatment of internal diseases seems to be difficult to apply properly in ordinary conditions of practice.

The conclusion of the work is that in veterinary practice too much washing is used or it is badly applied.

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BIBLIOGRAPHY: *Congres International de Pathologie Comparee* (International Congress of Comparative Pathology) published by Masson & Co.

It is already eighteen months since that event took place. The first of its kind, due to the exertions of Doct. Grollet, the General Secretary of the Society of that name in Paris, that Congress was, as I have already reported in the Chronicle of January and February of last year, an immense success, nearly one thousand scientists from every country of the world having

registered their names as members. South America distinguishing herself by the large number of her representatives—while North America had only three, one from Washington, one from New York City and one from Cornell University, and yet our confrères of the United States are not ignorant of the importance of comparative pathology. Societies, laboratories and schools with similar names are found in them. Certainly another Congress will find them more largely represented.

The second volume of the transactions of the Congress of 1912 has just been issued. It forms a large book of just 1,050 pages, handsomely printed, with numerous illustrations and containing the records of papers and communications, which were presented and read during the several days that the gatherings lasted. Among the communications from the American members are: One from Director Veranus A. Moore of Cornell University entitled: *Study of the relations between the physical condition of tuberculous cattle and the elimination of the tuberculous bacteria;* one from Dr. Erwin F. Smith, Chief of the Laboratory of Vegetal Pathology in Washington, entitled "*Is cancer a disease of the vegetal kingdom?*"

It is not possible to refer to all the contents of this second volume. Its reading will prove of great value. In fact, while one may regret that so long a time has passed between the congress and the publication of its labors, every one interested in the immensely broad field of comparative pathology and its various divisions, will read this second volume with interest and no doubt look for the possibility of an early repetition of another meeting. And yet how to expect it, with the number of Congresses of specialties, I may say, that are already established and that after all, are more or less but branches of the event of 1912.

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Parasites and Parasitic Diseases of the Dog and of the Cat. (*Parasites et maladies parasitaires du chien et du*

chat), by Professor L. G. Neumann of the Toulouse Veterinary School.

Asselin & Howzeau, the publishers of this work, have favored me with a copy and it is with pleasure that I call the attention of the readers of the REVIEW to it.

"Its publication was justified by the importance of the parasitic diseases in the pathology of the carnivorous domestic animals. The dog is the host of a profusion of animal or vegetal species, the great number of individuals in each parasitic species, the danger that many of these present in relation to the health of the dog, sometimes to that of man, and often to that of domestic herbivorum; the analogy that several of the parasites of dogs have with those of men; the light that the knowledge of their development may throw upon human parasitology and finally the interest that many people have for their dogs." All those are the reasons which have induced Prof. Neumann to write the work.

It was indeed necessary to gather together all the facts relating to the parasitic diseases of dogs and cats, and present them to all those who may have an interest of any kind with those animals. The work was a complicated one. What is known of those facts, very numerous as they exist, are spread all over in scientific and veterinary writings; and collecting them was a difficult and laborious task. No one could do it better than Prof. Neumann, who is already well known by his works on similar subjects.

The material is divided into eight chapters, parasites of the skin, of the connective tissues and muscles, of the digestive canal, of the serous membranes, of the respiratory system, of the circulatory, of the brain and organs of senses, and of the genito-urinary apparatus.

In these chapters the author has given description in proportion with the pathogenous action of each parasite, and the description is made so simple and clear that one can readily become familiar with the characters presented. There are added in the work 156 illustrations, many of which are original. After each

description of the parasite, the symptoms which accompany their presence are given and also the therapeutic and prophylactic treatment indicated for them. There is also a little appendix on the parasites of ferret.

If one considers that such subjects are sporotrichosis, wormicular dermatosis, distomiasis, dithyridiosis, bilharziosis, filariosis, protozoosis such as piroplasmosis, trypanosomiasis, leishmaniosis, toxoplasmosis, hemogregarinosis, form a very important part of this new book, he can appreciate its value and understand why it can be considered as a valuable contribution to the progress of parasitology.

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Medecine Canine (*Canine Medicine*). This is presented as the preceding by the old French veterinary publishing house of Asselin & Howzeau of Paris. It is the third edition, small octavo of over 372 pages and 69 illustrations. The authors of this little *multum in parvo* are Profs. P. J. Cadiot and F. Breton.

The little volume is a treatise of pathology and of surgery, both offering material for two parts, the first for medicine, the second for surgery.

In the first, the reader has presented to him the diseases of all the various apparatus of the entire organism; all of which are considered in the first 170 pages. Then come the infectious diseases, the skin affections, those of the eye and of the ear, and finally the various surgical diseases.

In this vast amount of material covering such limited space, a little over 300 pages, the authors had to resort to the greatest brevity and be very limited in the consideration of every portion of that first part.

In the second part, which treats of surgical subjects, the reader's attention is called to the most common operations likely to be required with canines—trephining of the nasal cavities, operation upon the eye, oesophagotomy, hernias, operations upon the stomach and the intestines, or again upon the urinary and

genital organs. A special chapter is given to intestinal sutures, etc.

An appendix is added to these two chapters, considering reproduction, parturition, rearing and feeding with brief indications on the age. It completes the work.

It is peculiar to notice how Profs. Cadiot and Breton must have worked to be able to gather so well in such space the amount of material which their little book contains. Of course it had to be concise, and the consideration of each disease had to be relieved of all unnecessary phraseology, and on that account some very important portions had to suffer from want of more space. Notwithstanding that, if such as ascites, mammitis, nephritis appear as having been treated rather too briefly, that of tuberculosis has on the contrary been presented comparatively in a sufficiently complete manner, taking in consideration the extensive experience that both authors have had with that disease.

The book is perhaps too condensed it is true, it is difficult to admit that such a broad subject as canine pathology could receive proper justice in such limited space and yet the fact that it has reached a third edition is sufficient evidence to justify the interest that it will offer to students and veterinary practitioners, and an early fourth edition can be looked for in the near future.

A. L.

THE ONE THING LACKING.

President Wilson's Wise Words on "A New Temper" Applied to Our Case.

The Chicago *Herald,* in a recent editorial, said that President Woodrow Wilson's letter regretting the rejection by the Senate of Thomas D. Jones, as a member of the reserve board contains a paragraph which no clear-headed, sound-hearted lover of his country could read unmoved:

"I believe that the judgment and desire of the whole country cry out for a new temper in affairs. The time has come

when *discriminations against particular classes of men* should be absolutely laid aside and discarded as unworthy of the counsels of a great people. The effort for genuine social justice, for peace, the peace which is founded on common understandings and for prosperity, the prosperity of co-operation and mutual trust and confidence, should be a united effort without partisan prejudice and *class antagonism.* It is only of such just and noble elements that the welfare of a great country can be compounded. We have breathed already too long the air of suspicion and distrust. *The progress of reform is not retarded by generosity and fairness."*

It is an open secret that the President's words of wisdom were meant as a criticism of Senator G. M. Hitchcock of Nebraska, whose temper, during the time of consideration of Mr. Jones for appointment brought out the letter from which we are quoting. President Wilson's letter was immediately proclaimed by the press of the whole country as one of the strongest appeals to the best that there is in American patriotism that has ever been penned. The fine temper of the President; the loftiness of his language; his ardent appeal to clear-headed, sound-hearted patriotism, won him scores of friends that he never had before. In his letter the President soars high above the mundane and paltry bickerings of those who opposed the appointment. Indeed, the President's letter will go down in the history of our times as a state paper ranking near to the best of John Jay, Alexander Hamilton, Thomas Jefferson and Abraham Lincoln, who are four of the greatest writers of state papers that America has produced.

Now it is a noteworthy fact that the very man so nobly, though indirectly, rebuked by the President for " discriminations against particular classes of men " which are " unworthy of the counsels of a great people," is the very man who has had the temerity in the Minority Report of the Senate Committee on Military Affairs, to oppose the Army Veterinary Service Bill, H. R. 4541. The President speaks boldly against such men as Senator Hitchcock, who make political capital out of dis-

criminations against particular classes of men. He tells us: "We have breathed already too long the air of suspicion and distrust. The progress of reform is not retarded by generosity and fairness."

Lay side by side the quotation we have made from President Wilson's letter of admonition and rebuke and the "Minority Views" of Senators Hitchcock and Thomas, the opposers of the bill. Read them both twice and see if the President's language is not applicable to these vapid and superficial "minority views."*

MINORITY VIEWS.

"We regret that we cannot join our colleagues on the committee in favorably reporting S 4331 to consolidate the veterinary service in the Army. This bill is the product of fifteen years of agitation carried on very largely by The American Veterinary Association, having some 3,000 members scattered over the country. They originated it, they have advocated it, and they have pushed it because of the advantage it would bring to the veterinarians who would become its beneficiaries.

"It involves an increase in the cost of veterinary service of about 37 per cent. It makes some increase in the number of men employed as veterinarians and inspectors, but it makes a much larger increase in pay and in ultimate cost to the government by giving to some the rank of officers and by retirement with official rank. It is another step in the direction of loading down the military service with civilian attachments.

"It is easy to argue that these changes work for efficiency in the Army. Perhaps they do to some extent, but we think the claim is largely exaggerated, and that the real motive is to get a permanent place in the Government pay roll.

"If this bill passes we will have the spectacle of Army veterinarians at the age of sixty-two, practicing their profession comfortably and enjoying the Government retired pay. There is reason for retiring officers at a certain age and giving them retired pay because their military service has unfitted them for

* Minority report published in August REVIEW on pages 554-5 and replied to by Garrison Steele.

any practical work in life. But in our opinion it is a bad practice to take professional men and treat them in the same way. They do not need the benefits of retirement on pay any more than professional men in civil life need such assistance."

They are the views of a man, or of men, who cannot rise above opposition to a class of men like the many thousands of veterinarians of this broad land who are united in spirit for a reform which, helping the army, will also be helpful to our country. They are the opinions of men who have not put generosity and a sense of fair play into consideration of this bill. Let them remember that what the President says is true: "The progress of reform is not retarded by generosity and fairness."

Such opposition cannot but die. Americans have too intense feelings against continued wrong; they have too broad a sense of justice to permit such "minority views" to carry in the face of a reform hampered by ungenerosity and unfairness. They have no less a staunch belief than President Wilson in progress toward betterment, and as a people we frown upon class discriminations—a sense which has been so admirably expressed by Tennyson is Lockley Hall:

> "For I doubt not through the ages one eternal purpose runs;
> And the thoughts of men are broadened with the process of the suns."

Let such opposition die. There are enough broad-minded men in the Senate of the United States to-day to support the Army Veterinary Service Bill and ensure its passage when it is called up on the floor. We of the veterinary profession have met plenty of such men like Senators Kern, Chamberlain, Lea, Catron, Lewis, and scores of others who have "the new temper," the broader gauge, of which President Wilson speaks. Let us rely upon them, and tell them we rely upon them, for the passage of this bill, H. R. 4541. G. S.

A MODERN VETERINARY BUILDING.

Having been privileged, at the recent meeting of the New York State Veterinary Medical Society, at Rochester, to listen

to a very interesting address on " Recent Advances in Veterinary Education," by Professor E. A. A. Grange, of the Ontario Veterinary College, in which some reference was made to the new building recently erected by that institution, we subsequently engaged Prof. Grange in conversation in regard to the building (with the smallest detail of which he seems to be familiar), and elicited the following information, to which we have given



THE NEW QUARTERS OF THE ONTARIO VETERINARY COLLEGE.

publicity for the benefit of those who may be interested in the progress in teaching veterinary science in North America, or for those who may contemplate the erection of a similar building for teaching purposes. Following is a brief outline of some of the more salient features of a modern building, which were firmly impressed upon the government architect who had charge of the work; paramount amongst them were strength, air and light, with space sufficient to accommodate, say, 400 students.

To meet the aforesaid requirements a five-story building has been erected, having an air space of, say, nine hundred thousand cubic feet, which covers a ground surface of ten thousand square feet. In order that the building may be strong and steady during delicate operations with the microscope and the like it is built of grey freestone and brick reinforced with 450 tons of steel frame work which is arranged so that each and every floor is supported by independent iron work and does not depend on the partitions beneath, or columns to hold it up. This ingenious arrangement makes it convenient when partitions require to be removed to enlarge or otherwise change the room which they enclose.

In order that class rooms and other parts of building may be properly ventilated an elaborate system of air ducts are installed in a manner that permits the outside air to be drawn through a current of water, where it is cleansed and then distributed to various parts of the building.

In order to introduce the fresh air and expel the foul or used air, a forty-horse power electric engine is placed in a pent house upon the roof. The engine besides driving large fans for ventilating purposes is to be used as the motor power for a large freight elevator which runs from the basement to the top floor. The elevator is so arranged that animals can be taken to any floor of the building.

The area consumed for illuminating the building measures 810 square yards for windows and 360 square yards of skylight surface in the roof.

The top floor is mainly consumed by two laboratories, one of which is 104 feet by 42 feet and is to be used in the study of practical anatomy. It has an incinerator at one end capable of cremating at least two dissected horses at one time; in addition to this is a blood-letting room and students' toilet rooms. On the north side of this floor is another laboratory fitted up for, say, a class of 100 students. Beneath this are three other laboratories of similar capacity. Throughout the building are various class rooms, varying in size for the accommodation of

about 200 students in each. One large room, called the Assembly Hall, will seat 450.

In addition to the class rooms and laboratories is a museum 45 by 48 feet; also store rooms, offices and various other conveniences. The basement of the building is occupied by the veterinary infirmaries, one large operating room, pharmacy, boiler room, grooms' apartments, and so forth.

Regarding the situation of the college it would be hard to find a more desirable site in the City of Toronto; especially as it has 134 feet frontage on that picturesque thoroughfare known as University avenue, and is in the midst of the most important legislative and educational centers in the Province of Ontario.

In designing the new building a strenuous effort has been made to erect and equip a suitable structure for teaching veterinary science according to the latest and most approved method.

HUMANE TREATMENT OF ANIMALS.

While we feel sure that the present-day veterinarian is naturally humane, it is reassuring to see a great state association, like the New York State Veterinary Medical Society, go on record at its twenty-fifth anniversary meeting in Rochester, in August, by adopting resolutions upholding that sentiment, and making the motto of the society, or its slogan, as the resolution expresses it, *The Humane Treatment of Animals.* We believe that all up-to-date veterinarians employ anæsthetics—general or local—for major operations, and many of them for minor ones, and we would urge *all* to make it a routine practice to employ anæsthesia in any and all surgical procedures, no matter how small, that would cause the patient any pain or suffering without their use. Once a practitioner begins to do that, he will find that it is not only humane, and a source of comfort to his dumb patient, but it will dignify his operative procedures and make them so much more simple and satisfactory; besides increasing his respect for himself and raising our profession up to its proper level, that of the medical profession.

Surely it was a noble inspiration that prompted the chairman of the committee on the twenty-fifth anniversary meeting of the New York State Veterinary Medical Society—himself a practitioner of nearly thirty years' standing—to have such a slogan emanate from that organization, as it launched on the second quarter of its century run. The same sentiment was expressed in a paper presented to the Missouri Veterinary Medical Association in July, by Dr. A. H. Holkenbrink, in a paper entitled *The Veterinarian's Humane Duty*. These are examples that the national body and every other association in the country might emulate with pride, that the veterinary profession may stand before the world in its true light, and its members not be erroneously confused with vivisectionists.

THE CONGRESS IN LONDON.

When we stated on page 526 of our August issue that a full report of the London Congress would be published in our September issue, that our readers might be in possession at the earliest possible date of the happenings in London that were to affect veterinary science throughout the world, we certainly did not realize the significance of those words as applied to conditions that have developed since that time. It is not alone happenings in London, however, that has affected veterinary science throughout the world, but happenings in many European countries. We have, as we promised, given our readers a full and faithful report of the London Congress, but not the report filled from beginning to end with scientific facts, gleaned from the leading members of our profession *throughout the world*, that we anticipated giving them. That was not to be; and those who anticipated such a report, must of necessity be disappointed; but not nearly as much so as those who have spent their time and their money to attend the Congress. And besides, through the keen and intelligent observations of our esteemed collaborator, Dr. De Vine, who represented us at the Congress, and his diligence in recording his observations enroute, we are able to give our readers a considerable

amount of information in connection with matters of interest to them, in addition to the report of the Congress. So that, besides the proceedings at London, published on page 694 of this issue of the REVIEW, will also be found a most interesting story beginning on page 678. And now the great European tour and the London Congress are matters of history, and many of our American friends are at this writing on board the "Magnolia," headed for New Foundland and Halifax, and will in all probability be with their families before this number reaches our readers; and the REVIEW extends each and every one a hearty WELCOME HOME!

SOUVENIR ISSUE OF THE VETERINARY JOURNAL—Just as we were closing up our forms for the September issue, a souvenir (August) issue of the *Veterinary Journal,* edited by Professor Hobday, London, reached our desk. This number, with a frontispiece of His Most Gracious Majesty King George V (Patron of the Tenth International Veterinary Congress, London, 1914), is devoted exclusively to the congress, and gives a brief history of it, dating from its origin through the efforts of the late Prof. John Gamgee, down to the present time. Also, starting with Gamgee, its readers are given an opportunity of becoming familiar with the faces of the great men of Europe, with whose names, in connection with veterinary science, they are already familiar. It is most interesting, and we are greatly indebted to Prof. Hobday for it.

ON BOARD THE STEAMER ANTOINETTE, JULY 30, 1914.—A post card with a picture of a little Dutch girl in colors, on one side, addressed to the editor of the REVIEW, bore the following signatures on the other side, showing the first and second sailing parties united abroad: J. F. DeVine, N. S. Mayo, E. B. Ackerman, E. F. Sanford, A. Eichhorn, C. J. and Mrs. Marshall, Harry D. and Mrs. Gill, L. Enos and Mrs. Day, J. L. Hoyliman, J. H. Blattenberg, P.D.Q., P.H.D., W. B. Holmes, D. M. and Mrs. Campbell, H. C. and Mrs. Moore, E. H. Shepard, T. B. Harries, J. M. Arinsburg, F. B. Hadley, W. Reid and Mrs. Blair and R. C. Julien.

ORIGINAL ARTICLES.

FEDERAL MEAT INSPECTION AND THE DESIRABILITY OF SUPPLEMENTAL STATE AND CITY INSPECTION.

By John R. Mohler, Washington, D. C.

Many authorities share the opinion that the exercise of control over the food supply and the problem of the procurement of cheap wholesome food for the poor offer a wider and more promising field of public usefulness than a number of the questions which are at present receiving an undue amount of public attention. The careful sanitary control of our food is especially necessary in the case of animal food products, particularly meat and milk, which are most apt to carry infections and are readily decomposable. This subject of food inspection has so wide a scope that a description of the examination of one animal product, such as meat, will afford a sufficient illustration of the principles involved.

The solid foundation of scientific meat inspection may be said to be the biological investigations of the meat measles and trichina, which were of such widespread interest that they gave the subject great impetus. Experiments regarding the danger to man from the consumption of meat of tuberculous animals and investigations relative to the production of meat poisoning in man from eating diseased meat likewise showed the great public importance and necessity of such inspection as would eliminate these dangers. As a result of numerous investigations along these and similar lines, many countries have from time to time enacted laws governing the inspection of meats, until at the present time legislation on this subject has been adopted by almost all the countries of continental Europe as well as by New Zealand, Argentina, Uruguay, Canada and the United States.

It will be seen, therefore, that a healthful and wholesome meat supply is becoming more and more sought after, and in numerous places efforts are being made to control and thereby improve it.

The principles of meat inspection vary in different countries, depending upon the local conditions. In countries where meat is not very abundant it is even necessary for the officials to keep a sharp watch to prevent the people from knowingly eating diseased meat.

In the United States the inspection of meats is conducted by the federal government, by the state or by the municipality. Inspection by the government has gradually been extended and improved since its inauguration by the law of 1890, until at present the federal meat inspection law, which is enforced by the United States Bureau of Animal Industry, is perhaps the most rigid and comprehensive of existing laws on the subject. Under this law meat inspection proceeds by logical steps, commencing with the careful antemortem examination of the animal, continuing with the inspection of the carcass while being dressed, the supervision of all meats used for curing, pickling, smoking, cooking or canning and finally with the proper, honest labeling of all meat or meat products.

The antemortem inspection consists in the careful examination of the live animals. This examination is made in the stock yards or in the pens or alleys of the establishments at which they are to be slaughtered. In the large stock yards doing an interstate business the antemortem inspection under the meat inspection law is reinforced by an inspection made under the quarantine laws, all animals entering the yards being inspected on arrival with a view to detecting contagious diseases and preventing their spread. When an animal is observed that gives any appearance of being unhealthy or unsound the inspector or his assistant affixes to its ear a numbered metal tag bearing the words "U. S. Suspect." Such animals are segregated and slaughtered separately from all others either before or after the regular killing.

The chief value of the antemortem inspection is in segregating the animals of suspicious appearance so that they may be given special postmortem examination, and also in detecting certain diseases, such as acute hog cholera, actinomycosis, acute febrile diseases, etc., in which the antemortem symptoms are pro-

nounced, while the postmortem lesions are sometimes very slight.

The postmortem inspection is much more important than the antemortem, and is our chief reliance in passing on the health of animals and the wholesomeness of their carcasses. In most cases it is impossible to determine the nature or extent of disease in the living animal. This is especially true of tuberculosis. Animals are frequently found which have every appearance of being per-



Antemortem inspection of cattle.

fectly healthy and in good condition, but after slaughter are found to be very extensively affected with tuberculosis.

The postmortem inspection is made at the time of slaughter. In the large packing houses where the rate of killing is rapid the system of inspection has so far as practicable been adapted to the conditions so as to provide thorough and careful inspection without unduly obstructing the operations of the establishment. Visitors sometimes wonder how it is possible for the inspection to be done thoroughly when the slaughtering is done so rapidly. In the case of hogs, for example, the glands of the neck are common seats of tuberculous infection, and the disease is first

looked for there when the head is severed. As the abdominal cavity is opened and the viscera exposed another inspector with practiced eye watches closely for the slightest abnormal appearance, and feels and lays open with a knife various parts in order that any obscure signs of disease may be detected. Upon observing the slightest indication of disease or any abnormality the carcass is " retained," that is, it is set aside, marked with a num-



Postmortem inspection of cattle.

bered tag for identification, and sent to a special place or room where a careful and thorough examination is made by another inspector to determine the proper disposal of it. By this means a much more thorough examination is possible than if the final inspection were made at the time of the first discovery of indications of disease.

Following the postmortem inspection there is a further inspection and supervision covering all the various processes of

preparing, curing, and canning meat food products of various kinds. This part of the work is done by men who are designated as meat inspectors and who have had special experience fitting them for such work. The object of this inspection is to prevent or detect any unwholesomeness which may occur or develop after the meat has passed the postmortem inspection, and also to guard against insanitary methods, adulteration, or the use of harmful chemicals or preservatives, and to enforce honest labeling. This



An Inspector watching the preparation of beef tongues for packing.

part of the inspection applies especially to such products as hams, bacon, lard, sausage, oleomargarine, and cured and canned meats of various kinds.

As an additional safeguard against adulteration or the use of forbidden chemicals or preservatives, samples of the various products are taken from time to time and examined by laboratory inspectors.

Having seen that only wholesome meat is used and that it is

prepared under clean conditions and without harmful preservatives, the inspectors go one step further and see that the package is truthfully labeled. Shoulders can no longer masquerade as hams, and products which formerly went under the names of "potted ham" and "potted tongue" must now be labeled "potted meats" or "potted meat food products."

The magnitude of the inspection is shown by some statistics covering the past seven years, the period during which the new law has been in effect. In that time there have been inspected at the time of slaughter over 378 million animals. Of these there



Insanitary conditions in an uninspected slaughter-house.

were condemned as unfit for food over 1 million carcasses and over 4¾ million parts of carcasses, making a total of nearly 6 million carcasses condemned in whole or in part. Nearly 40 billion pounds of meat and meat food products were prepared and processed under inspection, of which over 160 million pounds were condemned on reinspection.

During the past year more than two hundred and fifty thousand whole carcasses of animals and over half a million parts of carcasses were condemned, besides 18 million pounds of meat which was condemned upon reinspection. The probabilities are that if there were no inspection a large proportion of the meat so condemned would have been marketed for human consumption, and as tuberculosis constitutes the chief cause for condemnation, the direct relation of the meat inspection to the public health will readily be seen.

The standards of inspection are based on the best scientific knowledge of the present day and are sustained by the practically unanimous views of all the great scientists of the world who are experts on the subjects involved. Our regulations and practices are fully as stringent as those of any other nation, and under them much meat is condemned which in other countries would be passed for food.

It should be understood that the Department inspectors do



The inspection of neck glands of hogs. If tuberculosis is present it is usually found here.

not pass diseased meat; they only pass under certain circumstances the sound and wholesome meat of a slightly diseased animal after removing and condemning the affected portion, which is usually an organ.

The argument that all the meat of an animal affected to even the slightest degree with any disease should be totally condemned and destroyed, if carried to the extreme and to its logical end, would result in the condemnation of practically every animal

slaughtered and the abolition of meat as food. As Prof. C. E. A. Winslow, Curator of Public Health, American Museum of Natural History, New York City, has recently stated, "The ideally healthy animal is about as rare as the ideally perfect human being, and the policy of the United States Bureau of Animal Industry in condemning grossly diseased animals and organs, errs, if anything, on the side of severity."



Inspection of the viscera of hogs.

The high price of meat in recent years has been brought home to everyone who pays the bills. It is now evident that there is an actual shortage in meat production in the United States, regardless of whatever other causes may also have contributed to the rise in prices. It is estimated that in the last four years the per capita consumption of meat in the United States has fallen off nearly 12 pounds. The per capita consumption in 1909, based on census figures, was 162.20 pounds (exclusive of lard), while the estimate for 1913 was 150.62 pounds.

The most serious decline is in beef production. The number of beef cattle in the United States in 1909, according to the census, was 41,178,000, while the number in the country on January 1, 1914, as estimated by the Bureau of Statistics of the Department of Agriculture, was 35,855,000, a decrease of 5,323,000, or nearly 13 per cent. In the same period there was a decline of over 5 per cent. in the number of sheep and a very slight increase in the number of hogs.

It must be remembered, however, that the population of the



Dressing and inspecting carcasses of hogs and putting on the marks of inspection.

country is constantly growing, the estimated increase from 1910 to 1914 being nearly 7,000,000. The relative falling off in the number of meat animals is therefore even greater than the actual decrease. If we compute the number of animals necessary to maintain the ratio to population that existed in 1909, we find that there is now a relative shortage of 19.2 per cent. of beef cattle, or 8,536,000 head; 11.6 of sheep, or 6,509,000 head; and 5.2 of hogs, or 3,214,000 head, making a relative total shortage of 18,259,000 head. Comparing 1913 with 1909, therefore, we

are short nearly 9 beef cattle, 7 sheep, and over 3 hogs for each 100 people.

From being an extensive exporter of live cattle and meat products, the United States within the past year has become a large importer. Several years ago our exports of live cattle alone amounted to over half a million head in one year, besides which we exported over four hundred million pounds of meats. Our export cattle and fresh meat trade has now practically vanished for the simple reason that our home demand is sufficient to absorb our entire production. Our only meat exports of any considerable importance at present are cured pork products.

Lately we have been importing considerable quantities of meat, especially refrigerated beef, from Argentina and other countries. In March our imports of meat products amounted to over 23,000,000 pounds, and during the past six months, from October to March, inclusive, they were nearly 95,000,000 pounds.

The United States has undeveloped resources for cattle raising, and there is no doubt that by proper methods we can considerably increase our production of meat, but this will probably be a rather slow process and may require years of constructive effort. We have only 23 cattle to the square mile, while Belgium has 164 and Denmark 144. However, any such intensive scheme of beef production is found to be more expensive than the former methods of raising cattle on the vast grasslands of the open range.

With the growing scarcity of meat and the high prices of this and other foods it becomes more important than ever that our meat supply should be conserved and that we should waste no wholesome food. Our first aim in administering the government meat inspection is to protect the health of the consumer and to give him the benefit of every doubt. There is no disposition on the part of the authorities to pass for food any meat that is unwholesome or even of doubtful wholesomeness. But it would be an economic wrong to destroy on purely sentimental or esthetic grounds meat which we know scientifically to be perfectly wholesome.

It is estimated that about 60 per cent. of the total meat supply of the United States comes under the inspection of the federal government. Most of the remainder receives no inspection whatever, while a small proportion is subjected to some kind of inspection by local or state officers. For instance, the federal government is powerless to exercise any supervision over the meat that is slaughtered, prepared, sold and consumed entirely within a single state. For this class of meats, state inspection should be inaugurated as has been done in Pennsylvania, and the work of examining such meats taken up where the government inspection leaves off. In fact, the federal inspection should be supplemented not only by the state inspection, but by the municipal inspection as well, which would include the inspection of: (1) the small slaughter houses which do only a local business; (2) the commission houses and sausage factories; (3) the retail butcher shops.

It is a duty which the state and municipality owe to their citizens to establish a system of meat inspection that will afford adequate protection against diseased and unwholesome meats in order that all meat sold locally which has not passed the federal inspection will come under the requirements of an efficient local inspection system. The public must be able to secure the best as well as to avoid the bad. The great danger that menaces the consumer arises from uninspected meat produced in the numerous unclean and malodorous private slaughter houses so frequently found on the outskirts of most of our cities. To control the latter and to control them efficiently it is essential that laws be enacted for the proper supervision of these establishments which kill at all hours of the day and night, as inclination dictates or necessity demands. A far better law, and one which would receive the endorsement of all sanitarians, would ordain the abolition of these small buildings and the establishment of a public or municipal slaughter house, remote from the centre of the city and its business section, and where a thorough inspection by an experienced veterinarian could be made of all animals at the time of slaughter.

The modern idea of the slaughter of animals is that it should form one of the regulated industries, and this feeling is due principally to the desire that nothing but sound meat should be offered to the consumer. It may be argued that sound meat can be produced in these private slaughter houses just as well as in public institutions, but this is certainly incorrect so long as the inspector is enabled to make only casual visits, while during the remainder of the time the onus of judging whether a meat is sound or otherwise rests solely with the owner of the meat. If public officials are to have the responsibility it is only fair that the industry should be concentrated at certain points in municipal or central abattoirs, which are quite common and entirely satisfactory in Europe. Such abattoirs under rigid, though rational restrictions, would be beneficial not only in facilitating the business, but in promoting the sanitary interests of the city, since all the offal could be disposed of at once and all portions of the carcass not edible could be reduced to inoffensive articles of commerce. Furthermore, it is questionable whether any city could afford to employ the large number of officials that would be required thoroughly to supervise the inspection at the time of slaughter in the numerous, widely scattered establishments which at present exist in our larger cities. Any substitute form of inspection which includes merely the dressed carcass is unworthy of the name and is extremely delusive, since it gives a false impression of security to the consumer. This fact is being appreciated more and more by various municipalities and as an illustration I desire to mention the meat inspection system of Cincinnati, which I believe is the equal of any municipal inspection conducted anywhere in the United States. There are nine men employed by the city, seven of whom are veterinary inspectors, and two are laymen. The former conduct the antemortem and postmortem inspections and make such reinspections of the meat as are necessary. The two laymen are assigned to market places, inspecting meat markets to locate unsound meats on hand, the condition of ice boxes, cleanliness of the stores, etc., and to see that all meat and meat food products handled at these

markets bear either the marks "Cincinnati Inspected and Passed" or "United States Inspected and Passed." Antemortem and postmortem inspection is conducted at 12 local establishments. The above number of men does not include the Chief Meat Inspector, who estimates the cost of meat inspection to the city at approximately $9,800 per annum. It is the aim of the Chief Meat Inspector to co-operate with the Bureau of Animal Industry and to follow the rules and regulations of that Bureau, which I am glad to say is not only the written order, but is complied with fully in actual practice.

In some cities the inspection is enforced by laymen such as butchers, cattlemen, or men even more disconnected with the practical part of the work, and the results are seriously handicapped on account of their inability to recognize lesions which would at once appeal to one trained in the anatomy and physiology of domestic animals, and in the relationship existing between their diseases and human health. If an adequate reason for state or municipal inspection exists, and no one of intelligence will deny it, this should possess equal strength for having the law intelligently and efficiently enforced by capable inspectors skilled in the knowledge of sanitary science. In this country we are beginning slowly to recognize the need of special training for various branches of the public service, including the inspection of food animals and animal foods. The time has come to demand trained specialists who shall devote their whole time and energy to this particular phase of the public health protection. In addition we must insure them a tenure of office dependent upon efficiency gained by special training before they assume office, and not acquired solely as a result of their experience obtained at the expense of the public.

Therefore a corps of thoroughly trained veterinary inspectors is one of the most important links in the chain of any efficient meat inspection system. The government recognizes that it requires a high degree of skill to conduct this work, and it has therefore placed the meat inspection service under the civil service, and further, it will admit veterinarians only if graduates

of recognized veterinary colleges. In addition they are required to pass a civil service examination, and must, furthermore, submit to the Danish system of serving a probationary period of six months before obtaining a permanent appointment.

The extent of this work is indicated by the fact that at present inspection is maintained at 792 establishments in 227 cities and towns, requiring the services of about 2,500 employees, including a large proportion of veterinarians, who make all final decisions on postmortem. Taken as a whole, this large number of employees, constituting the great administrative body of the Federal Meat Inspection Service, is a conscientious and efficient force of men who deserve well of both the service and the public, whose welfare they constantly guard. In their loyalty to the former, they are necessarily loyal to the latter, for their interests are inseparable.

The present Secretary of Agriculture, Hon. D. F. Houston, upon assuming that office, determined to have the meat inspection service carefully investigated by experts outside the Department. Accordingly, in July, 1913, the following named gentlemen were engaged for this purpose, each to investigate the work in the states assigned to him: Wm. T. Sedgwick, Ph.D.; Hon. Sc.D., Professor of Biology and Public Health of the Massachusetts Institute of Technology, and a member of the Advisory Board of the Hygienic Laboratory of the United States Public Health Service.

V. A. Moore, M.D., V.M.D., Professor of Comparative Pathology and Meat Inspection, Cornell University.

M. P. Ravenel, M.D., Professor of Hygiene, University of Wisconsin, and Director of the Wisconsin State Laboratory of Hygiene.

J. W. Connaway, D.V.S., Professor of Veterinary Science, College of Agriculture, University of Missouri.

The letters of appointment contained the following statement: "With a view to safeguarding public health and maintaining the highest degree of efficiency in the meat inspection service of the Department, it is my desire that you report directly to me fully

and frankly the conditions as you find them at the various packing establishments, together with such recommendations looking to the improvement of the service as in your judgment may seem best." Drs. Sedgwick, Moore and Revenel have submitted reports of their investigations. Dr. Connaway has not yet found time to complete his investigations and make a report. From the report of Dr. Sedgwick, I wish to bring to you the following sentences:

"In conclusion, I may say that cut short by my illness as my investigation of the meat inspection service has been, I am nevertheless deeply impressed with its excellence, its usefulness and its efficiency. It is everywhere admitted I think that the United States meat inspection is far superior to any provided by the states, and that these constantly look up to it as a model toward which they are striving."

From that of Dr. Moore, I have taken the following statements: "In each of the packing houses the postmortem examinations were being made according to the regulations for passing and condemning carcasses. In every instance the regulations were being carefully observed. The condemned carcasses or parts of carcasses were taken by the inspectors and tanked as soon as the killing stopped, or they were placed under lock or seal to be tanked later. There seemed to be a clear understanding on the part of the veterinary inspectors of the rules regarding the condemnation of carcasses. I failed to find any infringement of the regulations on this subject." * * * "To convince one of the great advances that have been made it is but necessary to visit a local uninspected slaughter house and contrast the conditions found with those in federal inspected establishments." * * * I have not been told by anyone outside of the service of the good work that is being done by the inspectors in safeguarding the people against bad and diseased meat and the improvements in sanitary ways of handling meat and meat products. There is not a general understanding of what is being done nor of the problems to be solved. * * * The truth should be known. It would bring relief to the skeptical and much credit to the federal meat inspection service.

From Dr. Ravenel's report the following sentences are reproduced: "The two ideas which influenced me most in making the investigations were:

"First—Are the methods laid down in the regulations sufficient for the furnishing of good meats to the public and the protection of public health?

"Second—Are these regulations efficiently carried out? To both of these questions I am able to give an affirmative reply."

These commendable and stimulative statements should be considered in connection with the report of the commission of eminent scientists outside the Department, presided over by the "Father of American Medicine," Prof. Wm. H. Welch, of Johns Hopkins University, and appointed in 1907 at the suggestion of President Roosevelt to consider and make recommendations with regard to certain features of the meat inspection service. Their conclusion was that "if there be any general error in the regulations, this is in favor of the public rather than in favor of the butchers and packers."

The Department, however, has not interpreted these gratifying conclusions to mean that perfection has been attained in the work, but rather that much progress has been made in overcoming the serious obstacles which confronted the enforcement of a satisfactory meat inspection service. In fact, the Secretary of Agriculture is at present knocking at the door of Congress, requesting amendments to the present meat inspection law in order that it may be administered with the degree of effectiveness which its terms contemplate. For instance, the law now inhibits the sale of any meat or meat food products under a false or deceptive name, but such products may legally be sold without being labeled. In other words, it is desired not only to use no false or deceptive name when labels are used, but to compel the use of true labels on each product, primal part or portion of a carcass that has been inspected and passed. Again, the present ambiguous wording of the law makes it doubtful whether the statute prohibits the interstate shipment of meats which are unmarked, if cut from carcasses that have been inspected and passed and properly

marked. Without a clear requirement that inspection marks appear on each piece of meat that enters interstate commerce or upon the container thereof, the Department is greatly hampered in maintaining prosecutions based on the charge of shipping uninspected products. Furthermore, uninspected or unmarked meats should be prohibited from being shipped from one point to another in the same state which in the course of transportation pass through a second state. As commerce with the District of Columbia is not interstate commerce according to the opinion of Mr. Justice Miller, it becomes desirable to make all shipments of unsound and unwholesome meat and meat food products for human consumption from a state to a territory or to the District of Columbia, or vice versa, subject to the law. It is also desired to relieve the Department of the burden of proving *knowledge* on the part of the shipper that the meat products shipped were unsound and also that they were *intended* for human consumption. Moreover, authority should be given the Secretary of Agriculture to fix standards, to withdraw inspection on account of violation of any regulation, to use an abbreviated form of the present federal inspection marks, to grant permission for fats condemned for causes other than disease to be used in the industrial arts in lieu of their commercial destruction by a denaturing agent, to make reinspection, wherever found, of meat and meat food products bearing the federal mark of inspection, and to extend exemption privileges under appropriate supervision and control to butchers and dealers who are not strictly retailers, but whose business is so limited as not to justify the expense of establishing inspection at their plants.

The public may rest assured that the Secretary of Agriculture and other officers of the Department are disposed to do everything possible to maintain the meat inspection service at a high standard and to improve its efficiency so far as possible. The chief object always held in view is the protection of the people against unwholesome products.

See story of European trip on page 678; and report of Congress on page 694.

THE ADVANTAGE OF A SANITARY MILK HOUSE ON THE FARM.

By Dr. C. R. Potteiger, Assistant Food Inspector, Reading, Pa.*

To limit one's self strictly to the subject as stated, one might sum up the whole proposition in a statement to the effect that the advantage of a milk house is protection of the milk from contamination after it has been drawn from the cow. However, I feel it is necessary to include a few of the vital points of sanitary milk production in order to more thoroughly appreciate the necessity of the milk house for the handling of milk after it has been produced.

It is evident that in nature's scheme for nourishment of the young, milk was never expected to be exposed to the contaminating influences with which we are more or less familiar. If milk is sucked from a normal healthy gland it is the perfect food for the offspring, and in this natural method there is no possibility of outside contamination. When milking is done artificially, we have an entirely new and different set of conditions. The problem of securing clean milk, *i. e.,* milk as near as possible to the conditions as it exists in the udder, is the problem of dairy sanitation. It is the problem of reducing contamination from outside sources to the least possible factor.

In the production of sanitary milk we have five important steps which we must take in order to achieve a good product:

1. The cows and employees must be healthy.
2. They must be milked in a clean manner.
3. The utensils into which it is milked must be perfectly clean.
4. The milk must be cooled free from any chance of contamination.
5. The milk must be stored and transported under auspicious conditions.

* Read before the Schuylkill Valley Veterinary Medical Association at Reading, Pa., June, 1914.

The first two of these steps really have nothing to do with the milk house, but the milk house enters largely into the last three steps. However, the treatment of the subject would hardly be complete without taking into consideration the first two steps, because without proper consideration of these, the milk house would be of no avail in the production of good milk.

The first step I have considered is that the cows must be healthy. This is very necessary for the production of sanitary milk, when we consider that there are at least a dozen diseases which are transmissible from diseased cattle to the human, or which cause some allied disease in the human. Foremost among these we have tuberculosis, anthrax, foot and mouth disease, cowpox, mammitis or garget, gastro-enteritis, actinomycosis, botryomycosis, rabies, septic or febrile conditions and milk sickness.

It is very necessary to carefully examine cattle for these diseases when inspections of the dairy herds are made, but fortunately very few cattle have been found affected with these diseases in the herds from which milk is shipped to Reading. Tuberculosis is, of course, the most prevalent, and although the general condition of cattle in our community is good, and although they do not show physical lesions, still I have no doubt that a tuberculin test of all the herds would show a very large percentage of affected animals. Most of the farmers have been made to realize the danger of having tubercular cattle in their herds, and now buy none but "shipped" cattle; but very few farmers have had their herds tested of their own accord.

Next to tuberculosis the most prevalent diseases found which would affect our milk supply are garget, gastro-enteritis and septic or febrile conditions from various causes. These are especially dangerous for the reason that the average farmer, though he will not use the milk from an affected quarter, in a case of mammitis, will use the milk from the other three quarters unless strict orders are given to the contrary by the attending veterinarian.

I would urge all veterinarians to help in educating the farmer

to discontinue using any of the milk from a cow which has garget, for it has been demonstrated that the streptococci are found not only in the affected quarter, but in the others as well. These streptococci are apt to cause violent digestive disorders, especially in children, if used in the raw state. The same holds for gastro-enteritis and other septic or febrile conditions.

Fortunately, we have very little trouble with any of the other diseases owing to their scarcity and can pass them with the knowledge that they are, however, dangerous if found.

2. The cows must be milked in a clean manner. This involves not only clean methods but the necessity for clean cows, clean stables, clean bedding, clean floors, clean hands and clean clothes on the part of the milkers. This might be divided into four parts: clean cows; clean stable; clean milkers; clean milking.

A very large percentage of the contamination of milk is from the outside, and it is very necessary to guard against this at milking. The cows should be thoroughly cleaned free from dirt and manure, on the udder, flanks and tail, for if the cow is not clean it is almost impossible to keep the milk clean, regardless of what other precautions might be taken. The best way to procure this cleanliness is to have the cow curried at least fifteen minutes before milking, and the udders carefully washed and wiped. Clean stables are necessary, too, for the prevention of contamination. Too frequently one sees a ceiling which is not tight and through the cracks of which hay is hanging, offering inducements for spiders to spin their webs, which in turn aid in the collection of dirt and chaff which is apt to fall into the milk pail during the process of milking. A good tight ceiling carefully whitewashed obviates this difficulty.

Too often, too, one sees the milkers go into a stable, the floors and gutters of which have not been cleaned before milking, place a clean bucket and stool over the dirty straw and then later pick up the bucket and stool, soiling the hands and taking no measure to clean the hands when soiled. A few minutes' time in cleaning the stables and clean bedding would obviate this difficulty.

Clean Milking.—This constitutes possibly the most important

part of the milking process, for cleanliness of the milkers' costumes and hands, together with a little care in the milking itself, will enable the milker to produce a fairly good product, if the previous precautions have been observed. One occasionally sees the farm hands come in from the field with soiled hands and clothes, and after tying the cattle pick up a bucket and without any further ado begin milking, possibly milking the first few streams of milk onto their hands in order to facilitate milking.

In this way is produced a filthy milk, the remedy for which is self-evident. With milk produced in a sanitary way and with the proper precautions, the other steps in the handling of milk may be considered, in all of which the milk house is an important factor.

3. *The utensils used must be perfectly clean.* At first the connection between clean utensils and a milk house does not seem apparent, but to anyone who has ever inspected dairy farms and has seen the various places that are used for storing utensils, the advantage of a good clean milk house is evident. Where there is no milk house available, one finds the cans and buckets stored in all sorts of places, such as in spring houses, usually clean; in wash houses, stored in with the usual washing machines, water kettles, garden utensils and any old junk that happens to be around; standing on the platform around the pump, on which one usually finds dirt from the chickens, ducks and other animals common to a farm yard; standing upside down on the walk, exposed to the same contaminations as in the preceding instance, or hanging on a fence, usually at the barnyard, and exposed to the dust from the barn and manure yard.

With a clean and well-located milk house one is able to keep the cans on a shelf inside free from contamination and perfectly clean under all conditions. It also serves to keep the cans and buckets from rusting during rainy weather.

Of course, it is well to expose the cans to the sun and air, but for this purpose a shelf should be built on the side of the milk house large enough to acommodate all the utensils and high enough from the ground so as to be out of the reach of chickens,

ducks, dogs or cats, a fly netting over the mouths of the cans serves to keep out the flies which are apt to be found around a farm yard during the summer. The advantage derived from a milk house in being able to keep the buckets and cans clean should be enough to cause every dairyman desiring to produce good milk to build a milk house.

4. *The milk must be cooled free from contaminating surroundings.* It is absolutely necessary that the milk be properly cooled before being shipped to the city and this can be done properly only where there is a milk house available.

Where there is no milk house available, the milk is cooled and stored in all sorts of undesirable ways and places. Where there is no milk house there is no cooler, and that invariably means that the milk is stirred until cool. Some of the utensils used for stirring include broomsticks, measuring sticks, wooden paddles, dippers, spoons; while some few use a metal stirrer made for the purpose.

Where there is no milk house there is no place to keep these utensils and we find them stuck under the watering trough in the barnyard, hanging in a closet in the horse stable, lying on the fence at the edge of the barnyard, hanging up beside the pump and other almost inconceivable places.

In most instances the utensils are exposed to the dirt and dust of the barnyard, the chickens, birds, dogs and other chances for contamination common to such a place.

Nor is this the only difficulty experienced, for in most instances these utensils are not thoroughly cleaned either before or after using, and when they are washed are usually only rinsed in the dirty, liable-to-be-contaminated water of the watering trough in the barnyard.

In this way we see that the advantage to be gained in cooling milk before transporting it is altogether lost because of the number of bacteria and the amount of dirt added to the milk during the course of the stirring. It is for this reason that the stirring of milk is prohibited on the farms of those who ship milk to the city of Reading.

It must be understood, however, that milk must be cooled before being shipped to Reading, and the advantage of a milk house is immediately evident when we compare the foregoing system with cooling the milk over a good tubular cooler in a clean milk house.

Where a cooler and milk house are available the milk is removed from the stable immediately after each cow has been milked, so as to avoid having any milk being poured around in the stable exposed to the stable air and odors, and accounting partly for the too common "cowy" taste of milk.

Then, too, by removing the milk to the milk house after each cow is milked, we avoid having the cats falling into the bucket, or perhaps only drinking out of the pail of milk, so commonly allowed to stand on the low shelf until the other cows are milked. Where there is a milk house—used as a milk house only—and kept clean, the milk can be cooled free from any of the foregoing contaminating influences and with a reasonable amount of care a good product is produced. By having a milk house properly screened in summer, one is able to cool the milk free from dust and flies which it would be impossible to keep out if there were no milk house. The utensils can be kept clean and free from dirt, and with good water available in the milk house there is no necessity for contaminating the milk by using dirty water for washing the utensils. The milk must be cooled free from contaminating influences and this is possible only when there is a milk house provided.

5. *The milk must be stored under proper conditions.* Where there is a milk house we expect to find a trough of some kind (preferably cement) in which to store the milk after it has been properly cooled. Of course, where running water is available it is desirable to have a continuous stream flowing through the trough overflowing at such a depth that the water in the trough will be as high as the milk in the can which is in the trough.

Where this is not available it may be necessary for the farmer to use ice in a trough of stagnant water in order to keep the temperature down to such a degree that the bacteria will not

develop. A temperature of not over 50 is required for sufficiently retarding the growth of the bacteria.

Here, of course, the advantage of the milk house is again evident in that one is able to store the milk away from any chance of contamination. The advantage is more clearly seen when we compare this system with the storage of milk where there is no milk house.

We find some storing the cans of milk in creeks running beside the barn yard and liable to be contaminated with the barnyard drainage; others standing the cans in the watering troughs in the barn yard with the lids partly on the cans, but not so tight that a dog might not knock it off and allow the dirt of the barn yard to blow into it, others standing the cans in an exposed spring, which in case of a rain storm, are liable to fill and overflow into the milk cans; others storing in a tub of water near the barn, never thinking of changing the water for twelve hours—oftentimes the water being as warm as 75 degrees F.—which temperature is a veritable incubator for the lactic acid bacteria.

The milk house is a great advantage, too, in case of a contagious disease on the farm, for by the means of it the milk and utensils can be handled away from the house and any chance of contagion by people who do not have any relation to the quarantined ones.

Thus we see that the advantage of a milk house is really the protection of the milk from outside contaminations, which protection is possible only by means of a milk house that is clean, well lighted and ventilated, and supplied with a trough and a supply of good clean water.

We have seen that a milk house is a great advantage to a farmer in the production of sanitary milk.

But there are certain factors entering into the location and construction of a milk house that must be taken into consideration when a milk house is being planned, and possibly it would be well to enumerate a few of them.

The object of a milk house, as stated before, is to handle dairy products away from anything else, and so one of the most important things in the building of a milk house is its location.

Location. It should be so located that it is well away from the barn and pig sty.

It should be on a well-drained spot, preferably higher than the barn, at least with the drainage from the milk house toward the barn, and not the reverse. It should be so located that it is not too long a walk from the barn to the milk house so that the milk from each cow can be taken directly from the stable to the milk house.

It should be free from any contaminating surroundings of any kind.

It should not be built over a creek, especially one which receives or is apt to receive any barnyard drainage, or in the water of which the cattle may stand before it enters the milk house.

It should not be built over a pump unless a partition is placed between the pump and the part in which the milk is to be handled or the utensils washed.

Size and Construction. The size and construction of the milk house depends entirely on the use which is to be made of it, but for the average farmer who ships to Reading a house 10 by 12 feet will serve the purpose admirably. The average farmer wants only a place to cool and store his milk and to wash and store his utensils. For this purpose it is desirable to have the milk house divided into two parts in order that the washing of utensils shall not take place in the same apartment in which the milk is cooled and stored. An even division of the milk house, 10 by 12 feet, will allow ample space for both purposes.

A milk house without good water would be worth little, and so it is essential that this factor be well taken care of. It is not, however, necessary to have running water, for by means of a barrel raised a few feet on a siphon, one may easily procure a water system closely assimilating running water for use through a tubular cooler. It is necessary to have good drainage in the milk house, and this is best secured by means of a well-sloped cement floor.

Cement is impervious and easy to clean and, taken all in all, is less expensive than good heavy planks.

For the sides of the milk house, one has a choice limited only by the size of the desired expenditure. Only one thing is to be considered, and that is that it be made smooth and free from unnecessary ledges or rough surfaces, which would be apt to collect dirt.

There should be plenty of light and some arrangement made for ventilation. This may be secured by placing muslin over the window space, tipping windows, or by ventilating shafts extending from the ceiling through the roof.

For the proper airing of the cans it is desirable to have a shelf or ledge built on the side of the milk house large enough to accommodate all the cans and utensils for sunning and airing on clear days.

By locating a milk house properly, and having it clean, well drained and well lighted and ventilated, it is possible to keep milk free from any contamination after it has been produced and this is the aim and advantage of the milk house on the dairy farm.

Drs. Berns, Gannett and Risley.—Dr. George H. Berns, 74 Adams street, Brooklyn, N. Y., who has conducted a veterinary practice from that address since 1879, and whose establishment as an incorporation since 1909 has been known as The Berns Veterinary Hospital, announces, under date of August 1, 1914, that his associates in practice, Drs. Ray W. Gannett and Harry B. Risley, have become members of the corporation; the business of which will be carried on under the firm name of Berns, Gannett and Risley. We congratulate the young men in having associated themselves with so excellent a practitioner as Dr. Berns, so long established and with such a high professional standing. We also congratulate Dr. Berns in having associated with him two young men of such high character and professional ability.

By Wireless to the Review.—On board the Minneapolis, July 26, 1914. Dear Doctor: Fine weather, good company, not a sick moment; wish you were along. Kind remembrances.

Brenton.

STATE BOARD EXAMINATIONS TEST APPLICANTS' FITNESS TO PRACTICE.

By David Benjamin Morgan, President Veterinary Examining Board of Missouri, Neosho, Missouri.

In the June issue of the American Veterinary Review, there appeared an article under the caption *State Veterinary Board Examinations.* The article in question was in the nature of criticisms of the questions propounded to applicants for license to practice. The questions are recognized as being those of the Missouri State Board of Veterinary Examiners, and I am prompted to answer the criticisms, as since the establishment of the Missouri Board, its members have worked untiringly to raise our profession to a high standard. The Board of this state welcomes and invites just criticisms, but it resents ridicule, and must protect itself from any attacks which tend to reflect on the integrity of its members.

The usual list of applicants is composed of four types. The non-graduate, who has never attended a veterinary school of any kind, the correspondence school students, the student who has attended a college for one or two terms and the graduate of a licensed and recognized college of veterinary medicine.

It is evident that the critic in question places much credence on hearsay, when he makes reference to specific enlightenment sought by an individual applicant in the examining room. One of the questions by the Missouri Examining Board was to discuss "splenetic fever." An applicant while in the examining room is purported to have asked which they wanted "anthrax or Texas fever," and the reply was, "Texas fever." It would seem to the writer that the very question propounded by the applicant indicated a lack of clearness on his part of the subject. Splenetic fever and Texas fever are identically the same. One and the same fever designated by two different terms and names. In view of the fact that the list of applicants is usually large, oral questions cannot be propounded. It would consume much valu-

able time, and besides the ability to express one's self intelligently on paper indicates that the candidate is not lacking in fundamental training. To " size up " every individual applicant would prove a stupendous task, and favorable or unfavorable impressions would be matters of individual viewpoints.

In the examining room the applicant is permitted to seek enlightenment on any question, which may appear confusing. The Board of Examiners is always present and is ever ready to cheerfully assist an applicant to whom certain questions may not be entirely clear. Inasmuch as approximately two hundred different questions on surgery have been asked of applicants since the establishment of the Missouri Board it would prove difficult to formulate questions entirely unlike those propounded at previous examinations.

Let us analyze a few of the questions which have been cited by the critic.

1. Describe the gall bladder in the ox and horse.

 a. Describe the operation for removing gall stones in the horse.

Every reasonable practitioner would regard this as a fair and practical question. A number of applicants answered it with considerable clearness and indicated a thorough understanding, and knew the distinguishing features of the gall bladder of an ox, and the fact that this vessel is altogether lacking in the horse. One of the most reliable authorities on the horse disposes of the gall-bladder question with reference to the horse in one short, concise sentence by stating: " There is no gall bladder." It is true the second section of the question may be termed a " catch " question, but the applicant's answer would indicate if he had made any research in that direction.

The ox is supplied with a distinct gall bladder. Let me quote from a noted authority:

" This is a pear-shaped sac, four to six inches long, which lies partly on the visceral surface of the liver (to which it is attached), but largely on the abdominal wall at the lower part of

the eleventh or twelfth intercostal space. It may be regarded as a diverticulum of the bile-duct, enlarged to form a reservoir for the bile. Its neck is continued by the cystic duct (*Ductus cysticus*), which joins the hepatic duct at an acute angle just outside of the portal fissure, to form with it the bile-duct (*Ductus choledochus*). The latter is short and enters the second bend of the S-shaped curve of the duodenum, *i. e.*, about two feet from the pylorus. Several small ducts (*Ductus hepato-cystici*) open directly into the gall bladder."

2. Why does a cow chew her cud and when does she lose it?

a. How does she regain it?

b. Describe the œsophageal groove (*Sulcus Oesophageus*)?

This is a simple, yet important question, as the answer would indicate knowledge or a lack of knowledge on the part of the applicant of the process of digestion, and the simplest answer that I recall set forth that chewing the cud made possible the secretion of the large amount of saliva from the salivary glands, and enabled the animal to regrind such food which had not been properly masticated.

"Losing the cud" is a rather common expression, and the question was asked for the purpose of determining the extent of the candidate's practical knowledge of ordinary terms.

It may not be amiss at this point to quote from a publication issued by the U. S. Department of Agriculture, which regarded "loss of cud" of sufficient importance to give it space.

"It is very common among farmers, when a cow or ox is ailing, to say that the sick animal has lost its cud. If it is meant that the animal does not ruminate or chew the cud, and that it consequently must be sick, no fault can be found with the expression. In most cases, however, the remark is not intended to convey the idea that the animal does not ruminate, but that the loss of cud is a disease in itself; that the cud has actually been dropped from the mouth and lost, and that for this reason the cow cannot ruminate. We may here observe that loss of cud

is a symptom of suspended rumination, and shows that the animal's digestive functions are not performed as regularly as usual. It is a symptom of a great many diseases, and when its existence is detected it should lead the observer to try to discover other symptoms upon which to base a correct opinion as to the nature of the disease from which the animal suffers."

Quite frequently have I heard owners of cattle remark concerning a sick cow: "She has lost her cud." The expression borders on the vernacular, and is a sort of jargon or slang, if I may be permitted to refer to it as slang, quite current among laymen. To be specific such a thing as a cow losing her cud does not take place. It simply means that the animal has ceased to ruminate and indicates disturbances of some nature in the digestive organs. I cannot conceive of a question which would more readily test the candidate's familiarity with the practical. I recall a number of applicants who expressed themselves very clearly on the foregoing subject.

Again I take the liberty of quoting from a standard work relative to the "œsophageal groove" (mentioned under *b* in question 2.

"The œsophageal groove (*Sulcus Oesophageus*) is a semicanal which begins at the cardia and passes downward (ventrally) on the right wall of the reticulum to end at the reticulo-omasal orifice. It is about six or seven inches in length. Its axial direction is practically vertical, but it is twisted in a spiral fashion, thus its thickened edges or lips project first backward, then to the left and finally forwarded. The twist involves chiefly the left lip, and the relative positions of the lips is reversed at the ventral end."

The writer of the article in the June issue does not attack question No. 3, which treats of Stringhalt, and doubtless concedes that it is a practical question.

Let us proceed to the next question, which comes in for a severe rebuke:

4. Describe the trifacial neurectomy.

a. Why is this operation made?

In commenting on this particular question the critic pulled the wrong trigger. He expresses the hope that some of our skilled surgeons will tell us how they have performed neurectomy for facial neuralgia in the horse or cow. Facial neuralgia? Who said anything about facial neuralgia? In glancing through a work on surgery by Drs. W. Pfeiffer and W. L. Williams I find on page 16 a splendid cut under "Trifacial Neurectomy," and setting forth the method of operating for "relief of involuntary shaking of the head." No one in our profession questions the abilities of these two excellent veterinary surgeons. Both are trained men, who have delved into surgery from a strictly scientific standpoint.

It is the constant aim of the Missouri State Board to prepare well-balanced examinations, which serve the purpose of eliciting from the applicant such information as will demonstrate that he has a well-grounded knowledge of surgery and kindred subjects, and is the possessor of such practical information as will enable him to master the many problems which are bound to confront him in actual practice.

The Missouri State Board believes that the great majority of men are honest and well-meaning, but owing to the very small percentage of men who are unscrupulous it is compelled to exercise the greatest care to prevent any undue advantage being taken by the latter class. Investigations reveal the fact that there is a tendency on the part of some colleges to drill students and have them familiarize themselves with a certain line of questions and the answers thereto, and in this manner make it possible for the incompetent student to occasionally pass. Frequently it develops that applicants who pass under such circumstances fail to hold their own, and in a very short time sift through to the bottom, and never gain a standing as practitioners.

Our Board is striving towards uniformity as far as consistent. Gigantic strides have been made to eliminate the quack. The "chaotic" state has long been passed, and we behold the dawn of a bright future when the members of the veterinary profession will be looked upon as among the world's greatest bene-

factors. We are pulling together for the purpose of protecting the public at large as well as the trustworthy and honorable practitioner. Until a number of our sister states assume a better and more advanced position along veterinary lines, Missouri cannot consistently give the question of reciprocity favorable consideration.

Instances can be recalled where petitions have been presented to the Board of Examiners requesting that certain applicants be passed and given license to practice. Such proceedings the Board most bitterly assails and condemns, for its members believe in playing the game with their hands above the table, and performing their duties fearlessly, irrespective of persons. Our motto has been: "Hew to the line, let the chips fall where they may."

Kindly aid, encouragement and helpful suggestions from the members of the profession are earnestly solicited by the Missouri State Board. With the help of the honorable and sincere practitioners it hopes not only to keep up the present high standard attained in this state, but to bring about a still better understanding and appreciation of the industrious and diligent army of veterinarians who are striving for the protection and perfection of the animal kingdom.

Suggestions for the Control of Hog Cholera is the title of a bulletin issued by Dr. S. H. Ward, president of the U. S. Live Stock Sanitary Association; prepared and published under resolution of executive committee August 10, 1914. This valuable little bulletin, from such an authoritative source, deals specifically with control and prevention of this pestilential disease. Copies can be had by addressing the secretary, Prof. J. J. Ferguson, Union Stock Yards, Chicago, Ill.

Higgins and Vallin for Board of Health.—Dr. C. H. Higgins and R. E. Vallin have been appointed by the city council (Ottawa) to fill the vacancies on the local board of health created by the resignations of Mr. Norman Smith and Dr. R. H. Parent. * * * * (Ottawa *Free Press.*)

THE CESARIAN OPERATION IN THE CANINE.

By A. T. Gilyard, D.V.M., Waterbury, Conn.

Dystocia is quite common in the smaller breeds of dogs, and upon the successful handling of the condition depends no small share of the veterinarian's reputation.

It is indeed discouraging to work for hours upon a valuable female dog suffering from difficult labor, using all of the different obstetrical instruments at hand and with strict observance of asepsis, only to be rewarded with the disappointment of showing the expectant owner a litter of dead puppies, torn and cut to pieces by the instruments. Following this on the next day we are usually met with the painful necessity of notifying the owner that the bitch has died from shock, which in this case means that she has succumbed to sheer exhaustion, resultant upon the prolonged labor pains and the severe strain to which even the best operator is bound to subject the animal during a very difficult delivery of a whole litter of puppies.

Practically all of this trouble may be avoided by the prompt employment of the cesarian operation, which procedure should always be resorted to when the puppies are not easily delivered alive after one half hour's careful manipulation.

When the difficulty is at all great, that is when it is necessary to use instruments, other than a blunt hook, do not delay the operation as the puppies will soon be dead and the dam too exhausted to last very long.

This is one of the very few major operations which should be done without general anesthesia, the omission in this case is warranted by two very good reasons.

The first and most important is the necessity for a mother's care of the puppies during the first few hours after birth. The bitch which has been anesthetized will pay no attention to her offspring through this most important period and will often kill or disable them.

The second reason is that in nineteen out of twenty cases the subject will lie perfectly still during the operation, showing that the pain caused by the surgeon is entirely eclipsed by the suffering attendant upon the prolonged and futile contractions of the uterus.

At the termination of pregnancy the abdomen is so distended that its wall is very thin, especially near the median line.

That the stretched muscles are but slightly sensitive is proven by the fact that there is hardly a twinge of pain as the knife passes through them.

The field of operation extends from the brim of the pubis to the umbilicus, the most central part of this should be chosen and boldly invaded.

The length of the incision should be governed by the size of the subject, it should be no longer than is absolutely necessary for the handling of the uterus and the withdrawal of the fetuses.

The knife must avoid the mammae and pass parallel to and not more than one-quarter of an inch distant from the median line.

After puncturing the peritoneum with the scalpel complete the incision with the probe-pointed bistoury to avoid injury of the viscera.

It, of course, goes without saying, that if success is expected the most thorough surgical precautions must be observed at every step of the procedure.

When the incision of the abdominal parietes is completed search the region for the bifurcation of the uterus.

There will generally be found a fetus, lying partly in the body and partly in one of the cornua of the uterus. Cut onto this, making two-thirds of the incision into the body and the remainder along the horn into which the fetus extends. This incision should be shorter than the one in the abdominal wall, as the uterus will stand considerable stretching and the smaller the incision the less suturing will be required to close the rapidly contracting and elusive uterine walls.

Grasp one lip of this opening with the compression forceps

and hold it up to the abdominal opening during the delivery of the fetuses. More freedom of manipulation will be enjoyed and better results obtained if the removal of the fetuses is affected with the uterus in situ, but the opening into this organ should be continually held up to that in the abdominal wall to prevent the spilling of fetal fluids into the peritoneal cavity.

The incisions should be made with the patient in the dorso-recumbent position; this should be changed to the latero-recumbent for the removal of the fetuses and the suturing of the uterus.

Remove all of the fetuses through the one incision and do it with the fingers only, after breaking the membranes with the finger nails. The cords may be neatly and safely severed with a small emasculator, such as is used in the spaying of bitches. Be careful to get each set of fetal membranes immediately after the fetus to which they belong.

Trace each horn to the ovary to make sure that no fetus in any stage of development or decomposition is left.

While the abdomen is open, work as rapidly as is consistent with good surgery, so as to prevent undue chilling of the viscera. Disregard the natural dark brown debris from the placenta, as this will discharge from the vagina during the few days following the operation just as it would after normal labor. Quickly close the uterine incision with interrupted catgut sutures, bringing the serous coat in contact with itself as in other abdominal work. Close the external incision with interrupted sutures of linen, which should be removed on the third and fourth days. Have the hind parts supported by the limbs while suturing the abdominal parietes in order to prevent the involvment of the viscera by the stitches.

Put the bitch and the puppies in a crate and send them home, cautioning the owner to pay no more attention to them than as if normal labor had taken place. Too much examining and handling of the mother and her beloved babes will often bring disastrous results. Never keep a bitch at the hospital after this operation, as she will not take good care of the puppies amid strange surroundings. The writer had an unhappy experience

along this line after his first cesarian operation, when the mother failed to own her puppies and killed them all. Since that the patients have all been sent home immediately the operation has been completed and a clean record is the result.

This operation has been a routine one with the writer for the past two years; some of the bitches have bred again with no trouble and in one instance it was necessary to resort to the cesarian operation a second time; in this case the uterus showed no scar from the previous incision.

Puppies brought into the world by this method are stronger than those born through the natural channels in the presence of any form of dystocia.

THE HARRISON NARCOTIC BILL.—We take great pleasure in advising members that the Harrison Narcotic Bill was finally passed by the Senate on Saturday, August 15.

The provision requiring the medical profession to keep a detailed record was entirely eliminated, so that the bill as passed by the Senate is in a most satisfactory form so far as the medical profession is concerned. We are having that part of the *Congressional Record* which treats of the final consideration of this bill in the Senate reprinted, and will send you a copy thereof in the near future.

We wish to advise also that the Pomerene amendment was rejected, which rejection we favored most earnestly. The bill now goes to a conference committee representing the House and the Senate. As the conferees may only consider differences between the bill as passed by the House and as passed by the Senate, no further question can arise as to the incorporation of the record provision.—(*The American Association of Pharmaceutical Chemists.*)

GROWING HOGS IN MISSISSIPPI is the title of a circular issued by the Mississippi Agricultural Experiment Station, by E. M. Ranck; embracing breeding, feeding, care and management, to supply the frequent requests for information relative to the above subjects by the people of Mississippi. The information is clear and to the point, and bound in a little booklet of 17 pages.

REPORTS OF CASES.

HYSTEROCELE.

By E. A. Van Antwerp, D.V.M., Brookfield, Mo.*

In response to an apparently urgent request from our worthy secretary, that I do something to help out on the literary programme of this meeting, and after promising to do what little I could toward it, I decided that the subject of *Hysterocele* might be of interest.

Many practitioners have seen very few cases of it, if any at all. This condition, which is a falling through the abdominal muscles of the gravid uterus and contents, lodging beneath the common integument which, from its stronger nature and more elastic property, allows the abdominal contents to lodge beneath it, giving the appearance of a great tumor suddenly formed on the underside of the abdomen. Usually pregnancy is pretty well advanced before this condition develops, and there are generally some causes in addition to the usual weight of the uterus under normal conditions. In some cases, there is found an excessive amount of a whitish, semi-gelatinous substance. In one subject, which I helped relieve at time of delivery, I removed more than ten gallons of this gelatinous substance. It will be seen that this condition will come about from excessive weight of the uterine organ and contents as well as extrinsic causes, such as violent blows, kicks from other animals, and very frequently from a degeneration or atony of the abdominal muscles. In a few cases I have had the privilege of examining *post mortem,* the muscles appeared soft and flabby, fiberless and almost colorless, showing evident lack of nutrition. It is surprising to what extent ruptures of these tissues can extend, and yet the animal make a voluntary delivery. Where interference is required delivery certainly is a laborious job.

Not wishing to take up too much of your time I will describe a few cases I have seen, as it seems to have been my privilege to have met with quite a number of them in my several years of practice.

Case Number One—A large roan mare was found early one morning greatly swollen under the abdomen, the swelling ex-

* Presented to the Missouri Veterinary Medical Association at Excelsior Springs, July, 1914.

tending well forward to the fore limbs. The owner had informed me that the mare was in a terrible plight, and she really was. The lower line of the abdomen was below the knees. There was a considerable edematous swelling, stiffness, and the animal could not be induced to move except by using a whip. She was placed in a small lot, fed and cared for, and in due time delivered her colt without assistance. No further efforts were made to breed this mare, but she continued to do some work on the farm, and after three years I lost sight of her.

Case Number Two—A large bay mare, a most singular case, was placed in small paddock expecting her to foal within a week or so. She was seen at night, apparently all right; the next



CASE NUMBER FIVE.

morning was found with foal at her side and her abdomen enormously distended downward. The rupture of the wall must have produced enough disturbance of the uterus to bring on the delivery of colt. However, in this case, the mare and colt succumbed in twenty-four hours.

Case Number Three—In May, 1910, I was called to see a standard bred, brown mare. This mare was within a couple of weeks of foaling time. During the preceding day she had shown a swelling just in front of the udder, which had increased so rapidly, the owner became alarmed, and well he had cause to be. At the time I saw the mare, the lower line of the abdomen was half-way between the hocks and the ground, and

continued dropping during the next few hours until it almost touched the ground. A mare in this condition is something very striking to see. The great depth from the vertebrae to the lower line of body, and with the width of body, makes an animal look as if she had been compressed by machinery. In one case one could readily feel a hand pushed in from the opposite side. This last case lived only about forty-eight hours from the time when the first changes were noticed.

Case Number Four—This was in the winter of 1911. A bay mare was enormously distended, and the condition supposed to have been due to flatulence, and as a result I was called to see the case. I found her very weak, the visible mucous membrane pale, almost colorless. The animal was scarcely able to walk, and the pulse imperceptible. The animal was not expected to live very long, and in this the owner was not disappointed. She lived three days and I had an opportunity to make a *post mortem* examination. The gravid uterus lay in contact with the skin of the abdomen. By making an incision carefully, I found the uterus enormously distended with liquids which I caught in a bucket, some fourteen gallons, and I absolutely believe there was a barrel of it, for it spread over the ground for several feet around the mare.

Case Number Five—The most recent case, and last one I will describe, is one with which I had experience this present season. The usual supposition was that this one had what farmers call colt founder. The animal was very stiff, moved with great difficulty, and a considerable swelling extended forward between the fore limbs. This swelling would pit on pressure similar to a swelling of purpura. The swelling gradually went down, leaving only a deep and flat sided animal, who looked as if her ribs were broken off at the vertebrae, and hanging down, owing to the compression in by weight of contents. This case developed about four weeks before foaling time, and although the mare was watched quite closely, they missed the proper moment, and the colt was delivered without assistance. I was called a few hours later to remove the placenta. The mare has done very nicely and the colt is in good condition. I have with me a few post card views of this last case, and if of interest, I will leave them with the secretary for those who wish to see them. The little eminence seen in the lower line about one-third of the way forward is the nipple.

I have been recently informed that *Case Number One* was in foal two years ago by aid of capsule breeding and was de-

livered of a live colt, that lived until about two months old. I do not think it practical to breed them, however.

UNUSUAL CASE OF CONSTRICTION.

By H. M. Hamilton, D.V.M., Paris, Ky.

"Careful observation, makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

Was called at 12:30 p. m. to see patient, a two-year-old bay gelding, trotting bred.

History—He had gorged himself previous night on rye, and was found a short time before I was called, sick. He had probably been sick all night.

Symptoms—Standing quiet except occasionally pawing, head lowered, ears dropped, pulse imperceptible, body, legs and ears cold; no peristaltic action.

In fact he presented a picture of death at first sight, and that being my prognosis, and not far distant, I waited for the end, which came in about forty-five minutes.

Diagnosis—Volvulus or rupture.

Postmortem—Abdominal cavity was filled with dark bloody fluid, showing extensive inflammation of peritoneum and portions of bowels. A portion of the peritoneum connecting the second or left division of great colon to fourth or right division had formed a loop, which was constricting about a three-foot loop of the ileum; this portion of the small intestine being in state of moist gangrene, with a small rupture and small amount of ingesta in peritoneal cavity.

This was very interesting to me, especially the autopsy, and hope it will be to the readers of the Review.

COW MOOSE IN LABOR—REFUSES ASSISTANCE—DIES.

By F. A. McCord, V.S., Edmonton, Alberta, Canada.

Am enclosing a photo of cow moose found by A. J. Aylesworth of Edmonton, while out taking moving pictures of moun-

tain sheep and goat. This was in the province of Alberta, along the foothills of the Rocky Mountains, six hundred miles north



of the American boundary line. Cow lived three days after being found and would not allow any assistance.

RUPTURE OF STOMACH IN THE HORSE.

By Crittenden Ross, D.V.M., New York, N. Y.

Called in the presence of a horse two hours previous to his death, the following symptoms were presented. The animal had a depressed expression; he stood with feet wide apart, head hanging near the ground, pulse about 70 and respirations shallow. Rectal examination revealed the feces of natural shape and consistency and no palpable intestine presented any abnormality. The pulse gradually grew weaker and the visible mucous membranes more anemic until the end came.

The History of the Case was that the horse had been in good health, never refusing a feed, but after his last feed he had been turned into a small lot, with his mate, to water. After drinking, the two companions began to play, but shortly the one ceased, and went to one side of the lot, laid down, and gave

evidence of pain. Later he arose and remained upon his feet until just before the end.

Post Mortem Findings. Upon opening the abdominal cavity a blood colored fluid rushed out; the incision was made sufficiently large to allow of an inspection, and then the different portions of the digestive tube carefully examined. As the region near the stomach was approached, cracked corn and oats were met. When the stomach was finally reached it was found to have a rent along the greater curvature ten to twelve inches in length.

TWIN FOALS—HORSE AND MULE.

By L. O. Lamb, D.V.M., Newbern, Tenn.

Am sending you a photograph of twin foals, a mule and a horse, the result of a double service by different animals the same day. This is the first instance of the kind to come under



my observation. The horse colt is rather inferior in conformation, but has the advantage of the mule in size; being 34 inches high. The mule is only 30½ inches in height but of good conformation. They are now one month old. The photograph was taken when they were two days old.

TWINS?

By Geo. C. Faville, D.V.M., North Emporia, Va.

Messrs. Parker and Harris, of Greensville County, Virginia, are large land owners, and, in a small way, cattle raisers. The

cattle run in a large swamp pasture. Most of the adult cattle are cows belonging to the tenants on the place and to the proprietors of the plantation, and are milked more or less regularly, the calf being allowed to take its share of the milk at milking time.

On April 23, 1914, a speckled cow gave birth to a spotted heifer calf. The after-birth came away normally in the usual time and the cow nursed the calf and was milked regularly and gave her usual flow of milk.

On May 29, 1914, this cow gave birth to a spotted heifer calf marked exactly like the first one, and is now nursing them both. They are marked exactly alike, but show the difference in age and a difference in size. Each calf, from appearance and development, was carried to full term.

In my experience this is very unusual. The facts as stated can be easily proven. Mr. Harris, who owns the cow, is one of our most reputable farmers, and he vouches for the absolute truth of the above.

QUADRUPLETS.

By R. A. Greenwood, V.M.D., Painesville, Ohio.

I recently met a most interesting case, and certainly an unusual one. A grade Jersey cow, four years old, gave birth to four calves, one bull and three heifers. The youngsters were all perfectly healthy and all took nourishment soon after birth.

Dr. Bolton Goes to Cuba—Dr. Meade Bolton, Washington, D. C., sails from New York on August 29 for Cuba, to conduct a campaign against hog cholera, which is causing great losses to men engaged in that industry on the island, the doctor having recently accepted a position from the Agricultural Department of Cuba.

Dr. Oscar Schreck Advocates Municipal Meat Inspection.—Dr. Oscar Schreck, of New Haven, Connecticut, has pointed out to the Board of Finance of that city the advantages of municipal meat inspection, and we trust that New Haven will not be slow to get in line with the many progressive cities throughout the country who are establishing up-to-date city abbatoirs.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Radial Paralysis, Sequel to Casting [*A. J. Cattell, M.R.C.V.S.*].—Seven-year-old cart mare was thrown for the extraction of a diseased molar. It was the sixth tooth; was hard to remove and was taken off in two pieces. When the mare was allowed to get up, the near foreleg refused to work, the elbow dropped and the extremity was held forward in a bent position. The mare was put in slings showing at first great pain, sweating and unable to straighten the leg. After two weeks the elbow region became considerably swollen and the triceps muscle was very tense. On consultation a diagnosis of fractured humerus was suggested. Three weeks later the mare stood on her leg, she was taken out of the slings, walked out with a little dragging of the toe, and three days after was working quite sound.—(*Vet. Rec.*)

Peculiar Calving Case [*A. F. O'Dea, M.R.C.V.S.*].—Under this heading the author records his experience in a case where, when he visited the cow, the subject of it, he found that the intestines were protruding from the vulva. By examination through the vagina he felt a large cone-shaped body, hairless and very slippery. Failing in his attempt to find a leg or the head, he advised the cow to be slaughtered and on examining the carcass he met with a monstrosity. The abdominal organs were developed and hanging loose. "The skin from the abdominal region was reflected back over the quarters and formed a sac. From this reflected cutaneous portion three legs were hanging, developed from the carpus only downwards. The head and neck seemed developed from the sacrum, the head lying beside the tail, and attached to this portion of the trunk there was also one fully developed foreleg. The hind legs were normal. The thorax was absent."—(*Vet. Record.*)

Embolism and Thrombosis in a Foal [*Horace L. Roberts, F.R.C.V.S.*].—Four-day-old Suffolk punch foal was born

apparently quite healthy. The navel did not bleed much and no ligature or dressing was applied. The animal, two days after birth, refused to suck. She showed great dyspnea, laid down and was unable to rise or to stand if lifted up. The temperature was 101 degrees F., pulse 50 and weak. Death took place on the fifth day. At post mortem there was found, dilatation of the heart, embolus attached to the pulmonary semi-lunar valve, thrombus extending along the pulmonary artery and also embolus attached to the aortic semi-lunar valve with a thrombus extending along and occupying the greater portion of the lumen of the aorta and its subdivisions. There was no evidence of omphalo-phlebitis nor thrombus of the umbilical cord.—(*Vet. News.*)

Heart Disease and Aorta Rupture in Brood Mare [*By the Same*].—Fifteen-year-old mare had a live foal. She appears well the next day until evening when she began to paw, she stretched out, shivered, reared up, and came over on her back quite dead.

Post mortem: On opening the thoracic cavity, showed a large clot of blood; rupture of an aortic aneurism had taken place. The heart was hypertrophied and dilated, myocardium in a state of degeneration and reddish-yellow color. The aortic valve was thickened and ulcerated, the mitral thick but not ulcerated.—(*Ibid.*)

Sabulous Deposit in a Gelding [*G. G. Rushie Grey, M.R.C.V.S., B.Sc.*].—Cart gelding, seven years, has always been in good health. He grows restless in his box, strikes his abdomen with hind legs, and seems in great pain. Pulse is 50, temperature 103 degrees F. Rectal examination is negative. Colic drench is administered. Next day condition is worse. Temperature up 107 degrees. Peritonitis is diagnosed. Death takes place the next day. Lesions of peritonitis are extensive, fluid contents smell urine and a great quantity of sabulous deposits is observed, some of which are as big as pigeon's eggs. The bladder was empty and ruptured. Urethra is occluded with deposits. Chemical analysis of these proved it to consist almost entirely of carbonate of calcium.—(*Vet. News.*)

Urethral Calculus in a Steer [*By the Same*].—Devon steer, two years old, was being fattened for slaughter. He has

had difficulty in micturating lately and has passed no urine for two days. He is restless, switched his tail frequently and shows a temperature of 102 degrees F. Rectal examination reveals a distended bladder and the urethra was much distended also at the ischial arch. Operation by puncture of the urethra at the perineum was performed followed by the escape of a large quantity of urine and immediate relief. The urethral incision had the coats of the urethra stitched to the edges of the skin and in a week was cicatrized, leaving a space sufficiently large for the steer to micturate, which he did, assuming the position of a cow. The steer continued his fattening and was slaughtered, when a calculus was found in the lower third of the urethra.—(*Ibid.*)

X-Rays in Canine Practice [*John Taylor, M.R.C.V.S.*].—This record was illustrated by two photos of the abdomen of a fox terrier, taken by an X-ray expert, after being shot. The photos show very distinctly the bullet and its location in the abdomen. The dog showed a small wound on the right flank in line with the point of the ilium. He was fairly bright and showed pain only when forced to walk, which he would do on his forelegs. X-rays were taken and an operation advised. When the abdomen was open, such lesions of acute peritonitis with laceration of the caecum were found that chloroform finished the operation.—(*Vet. Record.*)

Subcutaneous Sarcoma in a Horse [*R. Eaglesham, M.R.C.V.S.*].—Twelve-year-old black gelding had numerous growths in the subcutaneous tissues which got larger lately. They were on the neck, shoulders, on the sides of the ribs and the hind quarters. The largest about the size of a pigeon's egg. They were not attached to the skin, but showed prominently under it. The animal was in good health and seemed not to be incommoded by them. He did his work. They kept enlarging and some were removed for microscopic examination; they proved to be of sarcomatous nature. The case was not followed out and no further examination could be made.—(*Vet. News.*)

Rheumatic Tendonitis [*By the Same*].—Six-year-old cart gelding and a six-year-old cart mare. Both animals had been ill with influenza and both had apparently recovered. On resuming work both showed lameness which followed a chronic course in much the same way. In both the hind legs were affected. At

first the lameness was not marked, they were stiff, had cramps —they improve in action by exercise. Both animals were disabled for seven weeks. Enlargement and thickening of the sheaths of the tendons were the principal outside manifestations. There was such a condition of the tendons that knuckling became well marked. Notwithstanding external as well as internal treatment both horses had to be destroyed.—(*Ibid.*)

Renal Calculus in a Mare [*By the Same*].—A case of chronic nephritis with formation of calculi in a twelve-year-old van mare. For two years she had passed blood casts in her urine intermittently, otherwise did not seem to suffer, showing no systemic disturbance. She kept in good condition and worked. Lately she has lost appetite and flesh. No change in her pulse or temperature; she, however, had great thirst and micturates often, in great quantity. Her urine has a bad smell. The mare has no swelling about her, no pain anywhere, no colic and rectal examination was negative. Finally considered incurable, she was destroyed, after having been ailing two and a half years. At the post mortem there were found lesions of chronic nephritis with sabulous matter in the pelvis of both kidneys, with small calculi in the left. The ureter and bladder were inflamed and had their mucous membrane thickened.—(*Ibid.*)

FRENCH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Glandular Lymphosarcoma and Aortic Ossification in a Horse [*Mr. Roquet, Adjunct Professor*].—This was a surprise of autopsy. The subject had no history and was used for practical exercises of the technic of post mortem. On opening the abdominal cavity and removal of the intestines an enormous globular mass, bigger than a man's head, was found in the sublumbar region. It was in connection with the psoas, the aorta, the posterior vena cava, the kidneys and the ureters. Forward it reached the trunk of the great mesenteric artery, the cross of the coecum and folded colon. Behind it extended to the quadrifurcation of the aorta, and involved the origin of the iliac arteries. By its inferior face it is adherent to the great mesentery. It was an enormous lympha-denoma, forming an ovoid mass that weighed 6 kilog. 200.

By its superior plane, it presses upon the aorta and vena cava. The artery shows the lesions of *ossifying* aortitis. In the vena cava there is a small thrombus. The right kidney is atrophied and its ureter is flexuous, describing an S-form from its origin until it enters and runs through the neoplasm. There is hydronephrosis of the right kidney and corresponding hypertrophy of the left.—(*Journ. de Zootech.*)

Œgagropile in Small Colon Kills a Horse [*Major C. Lesbre, Army Veterin.*].—Nineteen-year-old horse, robust, in fair condition, without history of preceding abdominal troubles, is one morning taken with colics. These are slight, but accesses of violent pain are followed by more or less long periods of quietness. When in pain, the horse paws with one forefoot or the other, looks at both flanks, lays down slowly and carefully, rolls and lays on his back. He makes unsuccessful attempts to defecate. Laxatives and pilocarpine are administered. The condition remains the same. Chloride of barium produces only insignificant expulsion of diarrheic feces. For a week the same manifestations prevail until finally the case grew worse and death occurred after an illness of 12 days. Post mortem revealed the lesions of acute peritonitis and on the fourth portion of the large colon a motion 30 centimeters long, through which is detected an œgagropile completely closing the opening into the small colon, which is entirely empty. The œgagropile is rounded, mamillated on its surface and weighed 3 kilog. 100 gr. It was formed of vegetal fibres extremely fine, with a nucleus surrounded by concentric layers.—(*Bullet. Soc. Scien. Veter.*)

Another Observation of Larvar Cylicostoma [*MM. Gillet and Teppaz, Army Veterinarians*].—Six-year-old mare had a rather unsatisfactory condition, she has had a cold lately. She is kept under observation and is soon unable to do her work. She shows symptoms of severe anhemia. The intestine works normally. Appetite is delicate. The mare has no colics, no hyperthermy, no hypothermy. Tonic treatment is prescribed. Cacodylate of sodae, simple serum; cafeine, etc. No result is obtained. Mare dies after an illness of twenty-three days. Post mortem: Eight litres of yellow serosity in the abdomen; in the intestines more or less semi-liquid alimentary matter in which swim an enormous quantity of cylicostomas. Mucous membrane congested. In the coecum and colon numerous black dots indi-

cating the presence of cysts containing larvae or embryos of cylicostomas. With magnifying glass many of these are seen, gorged with blood, and not adherent to the mucous. Lymph glands are hypertrophied. The other organs are normal. The mare evidently died of vermiform anhemia caused by cylicostomas.—(*Ibid.*)

Polioencephalitis Simulating Rabies in Dog [*Dr. L. Marchand and Prof. G. Petit*].—Crossed German bull, ten months old, is ill. No appetite, light cough, running nose, eye soiled with purulent thick, greenish discharge, he stands unsteady, moves poorly, hesitating, hyena-like, and has a tendency to drop on his hind quarters. The diagnosis is certain. Distemper, characterized by troubles of anterior respiratory passages and complicated with nervous manifestations. No bronchitis nor pneumonia. Rapidly the nervous symptoms become more severe. In three days he is paralyzed on the hind quarters. The appearance of the dog is peculiar; with his mouth open, his glances acute, the dog at the slightest noise trying to bite at any imaginary object. For every one round he has rabies. The symptoms lasted two days, followed by death. The post mortem revealed only congestion of the brain with lesions of polioencephalitis. No *corpuscles of Negri* were found, notwithstanding careful researches.—(*Rec. de Med. Vet.*)

Generalized Alopecia in a Horse [*Major Rendu, Army Veterinarian*].—Chestnut mare has been sickly and in bad condition for some time, yet the appetite is normal, and the mare lively. The coat is dull, the body is clipped, not the extremities. Arsenic treatment established, and rich diet prescribed. After a while the condition becomes alarming. The temperature goes up to 39.3 degrees, the pulse is accelerated and almost imperceptible the heart's beatings are irregular, 112 a minute. Swellings of the extremities take place. Over the parts not clipped, the hairs come out easily, drop in mass, the dermis is exposed, shrunk. Then the eyelids are affected, and gradually the falling off of the hair spread, so that on a level with the head, the neck, the ribs, the abdomen, the rumps, the extremities are with hairs, and even the long hairs of the mane and tail came off with the slightest pulling. The condition of the mare grew worse and death soon followed. Post mortem revealed all the lesions of severe anhemia with a hypertrophy of the liver complicated with sub-acute gastro-enteritis.—(*Rec. de Med. Vet.*)

Trypanblue in Bovine Piroplasmosis [*Sanitary Veterinarian C. Mellis*].—The records of a number of cases of that disease which were treated by the author and whose results justify the following conclusions: Out of 23 sick individuals, in various states, 19 recovered. Four only died. Leaving a proportion of 82.6%. The fatal cases occurred in animals that received the drug by subcutaneous injections. To this method the author attributes the failure of the treatment. At first he used the subcutaneous injections whose action is slow to take place; the method to recommend is by intravenous injections, easy to perform and rapid in its effects. With the subcutaneous the effect is observed only after 24 to 36 hours, while by the veins it shows after 12 to 18. Besides this, the cutaneous injection may be followed by large abscesses or enormous swellings, which are not observed with the intravenous method. Pilocarpine added to the solution of trypanblue stimulates the absorption of the medicamentous mixture and prevents the constipation so common in piroplasmosis. Some cases considered as certainly fatal have recovered by trypanblue treatment, which would have died by any other form of treatment. There never has been any bad case of relapse, even with animals kept in infected centers, a kind of immunity seems to follow the treatment.—(*Rev. Vet.*)

Wide Pharyngeal Perforation by Abscess of Strangles [*Deteau and Fournier*].—Three-and-a-half-year-old colt has severe acute pharyngitis, with swelling of both parotids. He roars loud. Treated he is relieved. Two submaxillary abscesses being open. Few days later he has a relapse. New abscess forms on the left parotid which at one time threatens suffocation and requires tracheotomy. Explorating trocar introduced through the parotid swelling brings out few drops of stinking pus. Puncture with actual cautery is made and by laceration of the tissues a large quantity of grumelous pus with food is allowed to escape. The finger introduced in the wound enters into a large cavity filled with oats and bran. It is thoroughly irrigated and cleaned. It communicates with the pharynx—when the horse drinks the water escapes by the cutaneous opening of the abscess. Repeated cleaning out with salted boiled water, with liquid diet, were prescribed and the case made a final radical recovery in a few days.—(*Rev. Vet.*)

CORRESPONDENCE.

ARRIVAL IN PARIS AND LONDON.*

(From the REVIEW's Special Staff Representative to the Congress.)

Paris, July 22, 1914.

Editor AMERICAN VETERINARY REVIEW:

We reached Cherbourg too late Friday night to land, but were taken off the steamer by small boat Saturday, the 18th, at 7 a. m., and our six hours' ride to Paris was most interesting. The buildings, both houses and farm, constructed of stone with tile or heavy slate roofing, look comfortable and substantial. The well-kept yards and the large green fields give the landscape an appearance of pronounced neatness. Agriculturally, the land appears exceedingly productive—great, broad pasture fields separated either by streams or hedges, speckled with large, well-nourished red and white cattle, is indeed a pleasing sight to any one who cares for animals or agriculture, after eight days of imprisonment between sea and sky. The arrangement of the farmers in communities, or little villages where their splendid gardens are all located, and where their methods and difficulties can be discussed, and the unpleasantness of rural loneliness is overcome, would *prima facie*, at least seem an improvement over our rural arrangement. We arrived at Paris about noon, and scarcely had we entered the city until we all discovered the unscrupulous, grafting Parisien. To express with any satisfaction our contempt for this class of Frenchmen would require too much space.

Some of the things that are particularly striking to an American veterinarian are the great numbers of horse cabs used on the streets of Paris—horse cabs everywhere, but oh! oh! the *kind* of horses; the poor, lame, overworked, half-starved, decrepit brutes must really wish for the day when they will be taken to the equine abattoir, a place we visited this afternoon, and learned that about two hundred of these animals are slaughtered there weekly, under veterinary inspection. The veterinary inspector advised us that the principal causes of carcass condemnations are due to pleuro-pneumonia and cancerous condition

*Continuation of story begun on page 604, August issue.

of the kidneys, with an occasional case of tuberculosis and glanders.

Horse flesh is often prescribed by physicians for invalids; a fat horse has less market value per pound than thinner ones.

We have visited many points of interest, including Napoleon's and Pasteur's tombs. That indeed is wonderful, all inlaid with mosaic and gold, depicting his wonderful accomplishments for mankind in determining the cause and methods of control of many plagues and applying the pathway of research on a truly scientific basis. The honor done this *true scientist* can better be realized when one sees on all sides, either military display or mute evidences of a nation of war and plunder. We also visited the Alfort Veterinary School. The grounds and botanical garden, where many drugs are grown, are very fine, but the buildings, which are rather old, are surpassed by many of our American schools.

All of our party are well and you will probably hear from some of them from time to time.

Very truly yours,

J. F. DeVine.

London, August 2, 1914.

Dear Editor—Since writing you at Paris, under date of July 22d, we have visited some further points of interest there. I think the last thing I wrote to you about was the equine abattoirs. We next visited the public market and an abattoir (at Paris), where bovines and swine are slaughtered. The inspection here, as in the equine abattoir, is under the Prefect of the Police; politics does not influence the holding of office and an officer is not dismissed without cause, in the way of inefficiency or violation of regulations. Inspectors are retired at the age of sixty years. There are two market days, and all animals are examined on foot, and again after slaughter. There is also maintained a laboratory where questionable material is brought for further examination. The methods of slaughter and handling the animals are slow and antiquated as compared with a large abattoir in America. There are about 10,000 cattle, 26,000 sheep and 1,200 pigs slaughtered here weekly. All animals after slaughter are inflated by compressed air, similar to the way we inflate auto tires; this it is claimed facilitates skinning the animals and gives plumpness to the flesh. The plumpness was very noticeable in the case

of calves heads. The head is cut off, without being skinned, is then scalded in a vat of hot water and scraped by a revolving instrument driven by electricity. This instrument is very similar to a large drill, such as is used in the States for drilling or counter sinking holes in steel; using it sideways as a razor, it beats a Gillett safety all to pieces. These calves' heads are kept in vats of cold water and the inflation and extreme whiteness gives them a gruesome appearance, such as a body has that has been in water for several days.

The sheep's feet are also scalded and scraped, then packed in bundles by women and are sold on the market for making salads, etc.

The cattle we saw at the abattoir resemble our short horns. They are white and red and white in color. The white breed is known as the Charollais or Nivernais, and the red and white as the Normande.

Calves are tied with ropes on small trucks for slaughtering and skinning—age of slaughter from five days up.

The most frequent causes of condemnation are tuberculosis, when generalized, foot and mouth disease (sometimes quite prevalent), when there is evidence of great exhaustion or emaciation, also anthrax occasionally.

The method of slaughtering swine was indeed a curious sight to us. The animals are driven into a section of the abattoir called "*The Hell.*" This section is again divided into pens. A man with a mallet and woman with a frying pan and pail awaits them. The man follows a pig about whacking away at its skull until he stuns it, he then turns it half on its back and cuts its throat. The woman using the frying pan to catch the blood and passing it into the pail, to be used in making pudding or wurst. After a half dozen or so are thus slaughtered a thick layer of straw is put down, several pigs laid in a line on this straw, and another layer of straw strewn over them and lighted. These bright fires burning in the dark building all charred with soot and the rows of carcasses gives an appearance to the place that probably served as the nomenclature. The pigs are now loaded on low trucks, the woman gracefully tossing one end and the man the other. They are then taken out and hung up, the charred and unburnt hair scraped off of them. As can be supposed, the carcass is not the clean looking one of the hog that has been scalded and then scraped. Dr. Morel, who was in charge, then took us to the laboratory and showed us a case of naval tuberculosis taken from a calf carcass that morning.

He then showed us the carcass, which presented generalized tuberculosis.

Here let me relate one of the pleasantest incidents of our visit to France. As many REVIEW readers personally know, Dr. Liautard is spending the summer at his country home in close attendance upon his invalid wife. But the good fortune of again seeing the grand "Old Man" fell to Drs. Ackerman and Mayo; and since he could not be with us in Paris, he gave them a letter of introduction to Dr. V. Evens, of No. 8 Rue Monsieur Prince, Paris. Dr. Evens took us under his wing as we started for the abattoir. After we finished here, he left us at our hotel and called for us again after lunch in a large touring car. We rode down the Champs Elysees, through the Bois de Bologne Park, stopped at the La Pre Catelan restaurant, a beautiful spot in the woods where the elite of Paris gather in the evenings for amusement and refreshments. In the rear of the restaurant is an immaculately kept cow stable—chairs and tables on one side and cows and goats on the other. Here the animals are milked and the patrons are served the fresh fluid. From here we went to the Pasteur experimental farms at Versailles, and were introduced to Dr. Prevost, who explained in detail the work being carried on; also showed us the plain old rooms in which Louis Pasteur lived and the bed in which he died. It was at this farm that the first work on rabies begun, and some of the first cages used by Pasteur to confine inoculated dogs are still in use. At the close of the delightful day we were again taken to our hotel and, as had previously been arranged, we joined Dr. Evens as his guest for dinner that evening at the famous restaurant La Peyrouse, built in 1665. The quaint dining room, furnished in maroon and gold, has sheltered many diplomats and noblemen. It is now a noted rendezvous for those who enjoy rare delicacies served in faultless style.

Dr. Evens greeted us with the pleasant statement that many of the noted medical men of France and all Europe had dined here, and that he had brought to it the noted medical men of America. Evidence of mein host's popularity could be seen on all sides, and while not surprised we were nevertheless delighted to see on the menu cards of the house certain savory dishes designated *La Docteur Evens.* That our American friends may know how our veterinary friends in Paris entertained us, I am enclosing the menu served.* Those who can not read

* Not received.

French should have it translated. Old wine and then some more wine, after cigars and coffee. Dr. Evens, in a delightful way, complimented American veterinarians, their loyalty to the profession and the progress they are making; he spoke in Spanish, which was translated into English by Dr. Mayo. Several of our party responded, which was in turn translated in Spanish by Dr. Mayo, and Dr. Evens again translated it into French for the benefit of Dr. Morel, who had also been invited to be with us. And the ladies. Oh, yes! They were there, too. Ask any of them how they enjoyed it. I will simply add that earlier in the day Dr. Evens had said that *possibly* he would visit America this autumn. After entertaining the ladies he was *quite certain* that he would visit America soon.

After assuring our host through Dr. Mayo that in America we would style him a "Prince of good fellows," and drinking a toast to our old friend, Dr. Liautard, we departed amid courteous *au revoirs;* an accomplishment at which no Nation excels our French cousins.

After spending a week in Paris we left for Brussels, Belgium. The country in general seemed to change but very little. On arrival at Brussels, we immediately noted the absence of the ubiquitous taxi of Paris, and also that there were but few horse cabs in use here. The beautiful, big Belgian draft animals that we saw substantiated the wisdom of our American dealers in coming to this little country for substantial draft animals. We spent another day in Antwerp, and then off for Holland. Our introduction to the Netherlands is worth mentioning. When we reached the frontier at a city named Rosendall, some of us strolled about the station watching the inspection of baggage, others sat complacently in their compartments, when suddenly, by a volley of salutes and gesticulations, the guards finally made us understand that the train bound for Utrecht was pulling out and that we should have changed cars. We immediately started a small riot, held up the train and began throwing our baggage out of the windows and ran for the train, much to the amusement of the natives.

Our ride through Holland was very interesting. The level lowlands divided by hedges or streams, with the banks thrown up to form dikes, show the effects of liberal moisture and intensive cultivation. We crossed five rivers or canals and many small streams from the frontier to Utrecht, a distance of about forty miles. The variety of crops in a single field exemplifies the intensive agriculture practiced in this country. One can see

in a field of a few acres perhaps a crop of wheat or rye as high as the average corn in the States, a crop of roots, potatoes, beans, peas, etc., and still another piece of clover or alfalfa that would make a Californian farmer jealous. It is quite apparent that the feed bill is but little worry to the Hollander. The limestone or brick houses with thatched roofs, the immense wind mills, the open air spots where the large Holstein cattle are milked, the dogs hauling the milk to the farm house or market, are all sights that the reading American anticipates and enjoys.

The Dutch farmers (this includes the women), short of stature and rugged, in their quaint dress and wooden shoes, impress one as a diligent, honest people.

Our first stay in Holland was at Utrecht; here we were joined by the party that sailed June 10th. Those who have been three thousand miles from home in a strange land can well imagine the happy reunion of this evening. After exchanging experiences we of the supplementary tour retired, feeling thoroughly convinced that the further some people traveled the more elastic their descriptions grew. Ask Dr. Marshall the size of the strawberries they were served with at a certain banquet!

On leaving Utrecht we went by rail to Naarden, where we were met by Mr. Floris Vos, a delightfully courteous gentleman; we were conveyed in carriages to the Oud-Bussem Farms, of which Mr. Vos is director. The buildings are all brick with thatched roofs of the mansard style, the doors are painted green, the shutters bright red framed with white stripes and dark green border. The style and colorings of the buildings, surrounded by beautiful lawns and hedges, present a farm scene beyond description. The interiors of the dairy barns are finished in white tile for about four feet high, and a smooth plaster above. The summer barn is kalsomined with a dark blue tint which is said to discourage flies. The entire handling of the milk is sanitary and would compare favorably with any of our modern dairies in the States. A veterinarian and a bacteriological chemist are employed on the farm. From here we went to Holland's famous seaport, Amsterdam. The canal system here, as in other Dutch cities, attracts one's attention at once. It seems as if everybody was pushing or pulling a boat large or small. These canals are used also as sewer receivers. The water being changed every three days by pumping the contents over the dykes into the sea and then allowing water from the sea to fill them again. We went for a ride up one of the canals, stopped at Monnikedam, one of the noted so-called dead cities. This was a flourishing



Front view of mansion "Oud Bussem," showing a workman's dwelling to the right and the dairy house to the left.

city before the large area east of it was reclaimed from the sea, but it is now an inland town and is gradually being deserted. We also stopped at Edam, where the famous cheese is made, then to the Island of Marken—this is a fishing village where the people have changed but little in their customs since the beginning of the Fourteenth Century. The men wear large bloomers and wooden shoes, the women voluminous skirts. The boys and girls are dressed the same until the age of six, with the exception that the girls wear plain aprons and the boys flowered or figured ones. After six the boys wear trousers and may have their hair cut. The girls' hair is allowed to grow until the age of sixteen, when they have the back of the head shaved, leaving two strands in front which either hang down on either side or are tucked under the white cap, a universal head dress. The inhabitants of this Island rarely marry other than a native. It is claimed that this has greatly weakened the race and reduced longevity, and that it is rare to meet a native over sixty years old. Women of thirty appear older than the average American woman of fifty. Tuberculosis is said to be very prevalent here notwithstanding the coarse, rugged appearance, and that the women lead an out of door life, sharing the manual labor with the men. The houses are low and consist of one room or, in rare cases, an additional small one. Here an entire family lives. The sleeping apartments being a berth-like arrangement in a closet built in the side of the house. The room or house is kept shining clean, and tourists are eagerly invited in, with a hope that a coin will be dropped in the ever present saucer on the table. All occupants leave their shoes (wooden) outside the door. On this Island, as in Amsterdam and most places in Holland, there are no wells. The water in the canals is more or less salty, so the only drinking water to be had is the rain water caught in pails or cisterns or that imported (when means will permit) from other countries. Never was the saying: "Water, water everywhere and not a drop to drink," more significant to the American tourist than here. Our next day, July 31, was spent at the Hague; and, strange enough, on our trip to the Carnegie Peace Palace we saw evidence of military unrest on every side, but we were not to be deterred. After seeing this famous spot, we then visited the summer palace of Queen Wilhelmina, one of the rooms of much interest to us was the one termed the "Orange room." Here the paintings are by Rubens and his students. On one of the doors is depicted Hercules and Minerva, and between them is approaching the Goddess of

Peace. This painting was done in 1648 and this is the door through which the members of the first Peace Congress passed over three centuries later, 1899. The following day gave us more concern as we were informed that orders for mobilization of Holland troops had been issued and that no train would be available during the day. We immediately packed our belongings and waited for our hustling Eichhorn to find a way for us to quit Continental Europe. We finally got a train for Holland Hook about 7 p. m., and after delays of various kinds we landed in Harwich, England, twelve hours late, and London Sunday afternoon.

Now for the Congress,* which we fear will suffer severely on account of war conditions. The present belief is that most of the noted foreign veterinarians will be either drafted into service or be unable to secure transportation.

(I have purposely neglected mentioning anything concerning our visits to veterinary colleges, since Dr. Eichhorn and his party have seen many more than we, in fact they have visited some of the finest in the world. To do justice to these colleges and the abattoirs would require an article of much length and I am informed that Dr. Eichhorn and some of his party intend preparing an article on these subjects on the return steamer trip for our American friends to read. This will surely be interesting, as we will then have the combined views and expessions of able critics.) Yours truly, J. F. D.

Published Proceedings—We are just in receipt of the published proceedings of the annual and semi-annual meetings of the Colorado Veterinary Medical Association, edited by Secretary Newsom. These two meetings furnish material for a 32-page report that is very interesting and instructive.

Married—Dr. A. O. Rustad, Fergus Falls, Minnesota, was married on Wednesday, August 19, 1914, to Miss Hilda Huseby, of that place All their veterinary friends express hearty congratulations through the Review.

The Clinic of the Connecticut Veterinary Medical Association at Waterbury was large and varied; more cases being presented than could be taken care of during the day.

* Published under Society Meetings on page 604.

ARMY VETERINARY DEPARTMENT.

A COMMISSIONED VETERINARY CORPS FOR THE ARMY.*

By Garrison Steele, M.D. (University of Paris), Dr. Med. Veter. (Berlin), Chicago.

Thomas Babington Macaulay, the brilliant English essayist, in order to give his statements a show of familiarity, was wont to say that such and such a fact "is known to every schoolboy." In like manner, though more truthfully, it may be said that the struggle of the medical profession in the army for recognition and appreciation, and its success within recent years, is known to every physician in America. Were it not for the action of the surgeon general of the army of the United States, there would be no place here, perhaps, for reference to so cheerless a topic as a similar struggle to bring into being a commissioned veterinary corps in the army. For thirty-five years, with regular bills in Congress, that profession had been unremittingly struggling toward that end, without tangible result and almost without visible effect. On January 6, 1913, in the Sixty-second Congress, in the debate in the House of Representatives on a like measure, which went unanimously through the House, though there was no action in the Senate, Mr. Tillson, of Connecticut, evidently expressing the thought of the surgeon general, asked why the proposed veterinary corps should not be placed in the medical department. Up to that time there had never been a hint that such a proposal would be advanced, much less entertained; indeed, the leaders of the movement for a commissioned veterinary corps apparently were taken by surprise. Yet this should not have been so, because in a number of the smaller nations of Europe, notably Sweden, army veterinarians all belong to the medical department and have commissioned standing.

The true attitude of the medical department of the United States army toward the veterinary service came out clearly in the first session of the present Sixty-third Congress. On May 1st of last year Mr. James Hay, of Virginia, chairman of the House Committee on Military Affairs, himself reintroduced the

* Reprinted from the New York Medical Journal for July 4, 1914.

bill, To Consolidate the Veterinary Service, U. S. Army, and Increase Its Efficiency (now known as H. R. 4541), and it was according to custom, turned over to his committee for the first reading. It was sent for recommendation to the War Department. When it was returned to Mr. Hay, a number of highly important letters were attached; one from the Secretary of War; another from the chief of the quartermaster corps. The third and most important of all, as far as this article is concerned, was from the surgeon general of the army, which we reprint verbatim:

War Department,
Office of the Surgeon General,
Washington, June 12, 1913.

Memorandum for the Chief of Staff:

Subject: Bill H. R. 4541, to consolidate the veterinary service of the Army and increase its efficiency.

Veterinary medicine is a learned profession, with a voluminous periodical and permanent literature of its own. For efficiency, there is the same necessity that the horse doctor should be learned as for the man doctor, and as his patients are not able to speak and describe their symptoms, a greater amount of scientific accuracy and acumen is necessary for a correct diagnosis. The therapeutics and pharmacy of veterinary medicine are largely the same as for the medical service, and in Europe, where veterinary medicine has the dignity and standing of a learned profession, it has made valuable contributions to our knowledge of the causation of diseases. It is believed that it can not be placed on a high standard of efficiency without long continued application of the same agencies which have raised the medical corps of the army to its present standard. Conspicuous among these is the system of examination for admission to the service and for promotion. Others which may be mentioned are the liberal supply of literature and appliances and a close touch maintained with the progress of the profession in civil life.

It is believed that these things can be accomplished for the veterinary service only by making it a part of the medical department and permitting it to share the administrative machinery of the medical corps. This would not only conduce to the elevation and efficiency of the veterinary service, but would also be in the interest of economy, as all of its supplies could be most advantageously purchased, cared for, and issued through the machinery of the medical department. As regards the administrative question of supplying veterinary surgeons to the quartermaster department, it is believed that no difficulty would arise, as the veterinary officers needed for that service could be placed under the orders of the quartermasters at depots, etc., where their services were needed, or ordered to report to the chief of the quartermaster corps for such service and duty as he might desire to assign them. The establishment of the veterinary service as a corps of the medical department, like the dental corps and the army nurse corps, is not proposed for the aggrandizement of the medical department, but because it is believed to be the only way in which that service can be raised to a fitting plane of dignity and efficiency such as it has reached in European countries and in the armies of the great military nations.

For these reasons the draft of the bill submitted by the War Department on January 6, 1913, a copy of which is attached to the General Staff Report No. 8143, herewith, is believed to be much better calculated to increase the efficiency of the sanitary service of the army than the bill H. R. 4541 herewith. GEORGE H. TORNEY, *Surgeon General.*

Since this policy is adhered to in the *Report* of the Surgeon General, United States Army, to the Secretary of War for the year 1913, in which, on p. 169, we find a repetition of the language of the letter, we may take it seriously as the undoubted attitude of the medical department toward the veterinary service, and may examine the statements in the surgeon general's letter. This can be done with sanity and modesty; for the statements are not ours—they emanate from a high ranking medical authority whose words are indisputable.

At the outset the letter says: "Veterinary medicine is a learned profession, with a voluminous periodical and permanent literature of its own." Of inestimable value are the words of the surgeon general on this subject at this time. The medical department is the only department which could and does appreciate this point—a point which has been entirely lost sight of in the army for the reason that heretofore no one with knowledge of the fact, and authority enough in the army to back up such a statement, has been frank enough to admit it, nor firm enough to take a stand upon it. Whether one considers the veterinary profession in the old world or the new, a learned profession it certainly is. In Europe, in Continental Europe especially, veterinary medicine is part of the national educational system, provided for and endowed by the State, where the purpose is to train men as a national asset for public service in the army or in civil life. National veterinary colleges, like those of Berlin in Germany, Budapest in Austria, Alfort near Paris in France, and the veterinary college of Milan in Italy, are thus linked to the national government, and the products, the aspirations, the standards, the ideals of these old world institutions are known and venerated wherever the tenets of medicine are fostered and cherished. In America also, more and more, the veterinary colleges are becoming part of the State system of education, as at Cornell University and the University of Pennsylvania, and the pattern is derived from the old world. Neither this, nor a knowledge of the voluminous periodical and permanent literature of veterinary medicine is known to the army, other than by the medical department. Veterinary medicine is a technical branch removed from military men's ken of thought. The periodical literature is in many languages—richest in German, French and Italian; while the permanent literature, on established scientific fact and practice, though not so voluminous as that of human medicine, is at once the delight and despair of its students.

Next the surgeon general in his letter states why, for efficiency, the doctor who treats animals should be perhaps more a man of learning than he who treats man. It is certain that the medical sciences in which each must be grounded are the same for the veterinarian as for the physician. Whatever groups of studies, in the veterinary and medical curricula, are compared, the foundation and superstructure are similar. Besides, as the surgeon general's letter says, difficulties beset the path of the practice of the veterinarian that are unknown to the physician. Diagnoses of lameness in the horse, for example, are fraught with numerous perplexities. The difficulties increase with the complications of diseases; because, as the surgeon general reminds us, the animal is dumb, and greater acumen is necessary for correct diagnoses.

Continuing, the surgeon general says that the therapeutics and pharmacy of veterinary medicine are largely the same as for the medical service. This is true. The drugs are mostly the same, though the doses and effects, especially the latter, are very different. The difficulties, moreover, arising from the varied posology for the different domesticated animals, the various species, are at least equal to those that arise in the treatment of human beings. The surgical principles are the same; though comparative anatomy is fraught with far greater difficulties than human anatomy.

Further, the letter says that in Europe, where veterinary medicine has the dignity and standing of a learned profession, it has made valuable contributions to our knowledge of the causation of disease. A large proportion of the men who in Europe have been in veterinary work all their lives and have become distinguished as investigators, teachers, even as practitioners, have the degree of M.D. Such men, working exclusively in the field of veterinary science, have added glory to veterinary medicine. Koch, Schütz, von Behring, von Ostertag, Pasteur, are names to which probably the letter refers, for all have contributed knowledge of the etiology of veterinary disease. Similar conditions have prevailed in America; witness the work of Theobald Smith, who discovered the cause of Texas fever in cattle and thereby suggested the danger from insects as carriers of disease, which led to the discovery of the means of propagation of malaria and yellow fever. De Schweinitz, Marion Dorset and V. A. Moore are other Americans renowned in the same field.

Furthermore, says the document we are quoting, the appli-

cation of the agencies which have raised the army medical corps to its present high standard of efficiency will also raise the veterinary corps. This means the entrance examinations, work in the army medical school, promotional examinations and the rigorous surveillance of the work of medical officers. The framers of the veterinary bill had in mind all these things. What better model, aiming to produce efficiency in the veterinary service, could there be than that of the medical corps? A liberal supply of literature and appliances in the veterinary corps, as in the medical corps, is certainly necessary. This means power to learn and power to apply what is learned. Such an opulence in the furnishing of means of acquisition of knowledge and work would contrast with the stinted supplies at present furnished to veterinarians. The keeping in close touch with the progress of the profession in civil life has been the making of the medical corps and it will be the making of the veterinary service.

There are also mentioned the administrative advantages to the Government to be brought about by the proposed attachment of the commissioned veterinary corps to the medical department; the economical purchase of veterinary supplies, their care and distribution through the machinery of the medical department. These are medicines, instruments and material, appliances and biological products, all of which, with due regard to the needs of the veterinary corps as indicated by the veterinarians themselves, can be attended to very well through the medical department. Detailing veterinary officers of the medical department to the quartermaster corps is a mere administrative point which can be attended to without friction.

Finally, the surgeon general's letter states that the plan of attaching the veterinary corps is not proposed for the aggrandizement of the medical department; that would be saying that the medical department believes that coal ought to be carried to Newcastle. The medical department is big enough, important enough and influential enough to be under no necessity of aggrandizing itself by absorption of other services or parts of services. It simply invites the veterinary corps to share in its sanitary and medicochirurgical work. The letter closes with the statement that the attachment proposed is the only way to give dignity and efficiency to the veterinary service as in Europe. There the efficiency and concomitant dignity of the veterinary services is due to the commissioned standing—rank, which there signifies advancing knowledge, is attested by promotional ex-

aminations from grade to grade. The medical department knows that until this is done for the United States army veterinary service there is no possibility of raising its standards.

The astonishing achievements of the medical department of the army, since it has been given power and reward for its service, are known to the whole world. Press despatches from London* speak of the dinner given in honor of Surgeon General Gorgas on March 23d by the medical profession of the British capital, at which were present Sir Thomas Barlow, president of the Royal College of Physicians; Viscount Bryce, Sir William Osler, Arthur William May, medical director of the Royal navy; Francis N. Champneys, president of the Royal Society of Medicine; Sir Rickman Godlee, president of the Royal College of Surgeons; and Sir William Launcelot Gubbins, director of the British army medical service. This tribute to General Gorgas was in recognition of his brilliant achievements in the field of preventive medicine. He had just returned from South Africa, whither he had gone by invitation of the British Government to investigate problems in sanitation amongst the 200,000 Kaffirs employed in the Rand gold mines. His suggestions for prevention of pneumonia there, and of malaria in Rhodesia, will be of lasting benefit. Coming to him at the very summit of his fame, the recognition of his extraordinary professional judgment points to what has preceded. His work in Cuba, later in the sanitation of the Canal Zone, where yellow fever was banished from the Isthmus, and malaria kept in almost complete restraint, made possible the building of the Panama Canal, and caused his services to be sought by the government of Ecuador in its sanitary problems.

Of similar value to the Government, the medical department informs Congress, will be recognition of the veterinary service. It advises that the veterinarians of the army be formed into a corps under the provisions of a statute which will standardize the work. The veterinarians in the service at present are just so many units; the medical department has declared most emphatically that only just recognition of a commissioned veterinary corps can overcome the dissipation of energy and bring proper returns of economy and efficiency in advanced veterinary work. Mr. Hay, chairman of the House Committee on Military Affairs, voicing the same thought when the bill unanimously passed his

* The *London Daily Mail*, eulogizing Brigadier General William C. Gorgas, Surgeon General, U. S. A., says: "Perhaps of all living Americans, he has conferred the greatest benefit to the human race. The whole world, particularly the British Empire with its large tropical possessions, owes him a debt which Britons are proud to acknowledge."

committee on February 2d, said: "The veterinarians of this country are a body of highly trained and intelligent men who have made and are making great strides toward progress in their profession; and it is not reasonable to expect that the Government can secure the best talent of the profession unless some fitting and substantial recognition is given it."

Such are the views of the medical department of the United States army. This article is meant as an examination and exposition of the letter of the surgeon general, and is not a piece of special pleading. The plan was proposed by the medical department itself, for reasons which it gives, and because of statements for the truth of which it vouches. Let Congress listen if it will.

Why You Should Be Interested in the National Association Allied Horse Interests.—It aims to maintain the supremacy of the horse in sport and industry, and to prove that the horse is an economical factor in business. Its officers and directors are men who are earnestly interested in improving conditions connected with the breeding of horses. It can be readily conceived what an association with such aims, with a sufficiently powerful membership, can accomplish. It has done a great deal in the past year for the horse interests throughout the country, and with the establishment recently of a monthly periodical, the *Horse Lover,* will accomplish still greater things for the horse and allied interests in the coming year. *Every veterinarian in America* ought to support this organization by his membership in it. Write to Mr. George H. Webb, secretary, Industrial Trust Co. Building, Providence, R. I., for particulars, and note the names of the men upon the stationery that comprise its officers and directors.

A Preliminary Report on the Production, Action and Therapeutic Effects of Leukcytic Extracts, is the title of an article received during August by R. A. Archibald and Gertrude Moore, Oakland, Cal.; reprinted from the *Archives of Internal Medicine.*

The Transmission of Hog Cholera by Buzzards, is the title of an article by Dr. Charles F. Dawson, in *Florida Health Notes,* for June, 1914, the official bulletin of the Florida State Board of Health.

SOCIETY MEETINGS.

THE TENTH INTERNATIONAL VETERINARY CONGRESS, LONDON.

The Tenth International Veterinary Congress was opened by a social function in the form of an informal reception in the Grand Ball Room of the Hotel Cecil, London, on Sunday evening, August 2, 1914; Sir John McFadyean and Lady McFadyean receiving. A delightful evening was spent in getting acquainted and partaking of refreshments. A goodly representation of Americans was present, but the effect of military disturbances upon the attendance at the congress was already apparent. Many prominent members who had reached London during the day found at their hotels information which caused them to secure passage on the first train or steamer, to convey them back to their respective homes without delay. The business session was opened by Sir John McFadyean, on Monday morning, August 3, in the Central Hall, Westminster, who announced that it would be impossible for the Honorary President, the Right Honorable Walter Runciman, to be present. Therefore the first order of business was the election of a presiding officer, and Sir John was unanimously chosen by the association. In his address from the president's chair, Professor McFadyean reviewed the history of the Congress and its purposes, and closed his remarks by extending a warm welcome to the foreign members, and expressing his regrets at the lamentable conditions which caused the absence of so many of them. The report of the Honorary Secretary of the Organizing Committee was then presented by Sir Stewart Stockman, as follows:

Report of the Honorable Secretary.

Mr. President, Ladies and Gentlemen:

At the Eighth International Veterinary Congress, held at Budapest in 1905, a wish was expressed that the Tenth International Veterinary Congress should be held in London in 1913 in recognition of the facts that international veterinary congresses were first initiated by an English veterinary surgeon, John Gamgee, and that the Tenth International Veterinary Congress would fall to be held fifty years after the first which took place at Hamburg.

Before leaving England to attend the Ninth International Veterinary Congress held at the Hague in 1909, the representatives of Great Britain approached the British Foreign Office through the Board of Agriculture and Fisheries, asking to be authorized to say that the Tenth International Veterinary Congress would be invited to meet in London. Authority was given to make this statement at the Hague, where it was agreed that the Tenth International Veterinary Congress should be held in London and that the two British members of the Permanent Committee—Sir John McFadyean and Mr. Stockman—should, in accordance with by-laws 5 and 28, be entrusted with the formation of the Organizing Committee. It was explained, however, by the British delegates that arrangements had been made to hold an international medical congress in 1913, and it was decided that the Tenth International Veterinary Congress should be summoned for 1914, as it seemed inadvisable that two such important congresses should be held at the same time and place.

An organizing committee was immediately formed in the United Kingdom for the purpose of making arrangements for the Tenth International Veterinary Congress.

As it has not been the custom in the United Kingdom to finance these congresses by government funds, the Organizing Committee had to undertake the arduous and exceptional duty of collecting money by subscription to meet the expenses of organization. An appeal was issued to members of the Royal College of Veterinary Surgeons in Great Britain and her Colonies asking for subscriptions, and the veterinary societies throughout the empire undertook to assist the Organizing Committee in their task of advertising the Congress and collecting subscriptions. The appeal was responded to in the most generous way, and it became evident a few months after the undertaking was started that a sufficiently large sum would be available to enable the Congress to be carried to a successful issue. It was evident to the Organizing Committee that the British veterinarians had made up their minds that if the Tenth International Veterinary Congress did not surpass previous congresses it would be through no fault on the part of British veterinarians.

The Congress has also received very considerable support from leading agricultural societies and from individual agriculturists. The Foreign Office in London issued invitations to the various states asking them to be represented by delegates, and the Colonial Office, with the same purpose in view, issued invitations to the various dominions and crown colonies.

The President of the Board of Agriculture and Fisheries and the responsible officials of his department have extended throughout the greatest sympathy and support to the Congress, and through representations made by Mr. Runciman it was decided on behalf of his Majesty's government to officially recognize the Congress by giving a dinner in its honor to the various delegates. The corporations of the city of London have also been kind enough to extend their hospitality to the Congress.

As the time for the Congress drew near it was found necessary by the Organizing Committee to appoint a small executive committee, which was charged with the duty of carrying the Congress through. The work of both committees has been enormous, and as honorary organizing secretary, I hope it will not be out of place if I venture here to express my great indebtedness to all the assistant secretaries and members of both committees who have worked with me in the most arduous and self-sacrificing manner for the success of the Congress.

Many ladies have shown the greatest interest in the Congress and exceptional thanks are due to the Ladies' Committee who were good enough to make arrangements for the entertainment and enjoyment of the lady members of the Congress.

I think reference should also be made to the office of the Permanent Committee, which has recently been fixed at the Hague under the patronage of the government of the Netherlands. Owing to the establishment of this office it has been possible for the officials of the Tenth International Veterinary Congress to hold frequent communication of an official kind with the secretary—Dr. de Jong—who has always been ready to supply valuable information and advice to the British Organizing Committee.

In accordance with the by-laws, the British committee drew up a list of subjects for discussion at the Tenth Congress. This list was presented for consideration at a meeting of the Permanent Committee of the International Veterinary Congresses, held at Lyons in October, 1912, and with certain modifications which were given effect to, the list of subjects was approved.

In accordance with by-law 7, the honorary secretary was authorized to invite the formation of national committees in the various countries, and a circular letter embodying this request was issued in March, 1913, to the various members of the Permanent Committee, together with a list of the subjects for discussion. At the same time it was requested that the National

Committees should furnish the British Organizing Committee with a list of suitable reporters in each country from which the British Organizing Committee might make a selection.

The number of subjects for discussion on the program amounts to 23, and 89 reporters from the various countries consented to act.

The number of governments which consented to send delegates amounts to thirty, and in addition fourteen British and Colonial Governments have consented.

Various veterinary schools, agricultural colleges, agricultural societies and municipalities were also invited by the Organizing Committee to send representatives. Owing to the regretable position of affairs in Europe, however, many of these delegates and representatives cannot arrive in London, while others have found it necessary to return home. It is impossible, under the circumstances, to inform the meeting regarding those present. Inscribed in the list, however, there are about 1,500 members. The number of ordinary members is about 1,300. The number of lady members is nearly 200, and there are nearly 50 extraordinary members.

A complete program of the Congress is available to every member. This program deals with the arrangement and order of the subjects for discussion; the entertainments and excursions, and all such matters in connection with the Congress, and it is therefore unnecessary for me at this stage to make further reference to these subjects. I may say, however, that the Permanent Committee have decided that Item 6—Disinfection of Wagons—which was to be discussed in accordance with the resolution of the Ninth Congress, shall be deferred until the next Congress, as no report has been furnished.

I have also to announce that a report by a committee, appointed by the Ninth Congress, consisting of Herr Hoogkamer, Dr. Van Es, Herr Rickman and Sir S. Stockman, on the Oversea Transport of Animals, was considered by the Permanent Committee, and it was decided that it should be published and circulated to members of this Congress.

In conclusion, Mr. President, ladies and gentlemen, I would like to be allowed on behalf on my fellow-workers for the success of this Congress to express the deepest regret at the deplorable situation which has arisen in Europe. I think I will be expressing their views by saying that, although we feel that we have been compelled to bow to a force majeure which nobody could have foreseen, and which has occasioned the absence of

many brilliant representatives of veterinary science who had arranged to take part in this Congress, we do not grudge the efforts which we have put forth in the interests of veterinary science and the veterinary profession of the world.

At the conclusion of the secretary's report, several foreign delegates were called upon by the president. In their responses they expressed their appreciation at being invited to take part in this important function. The Congress then adjourned to meet at 10 a. m. of the following day.

August 4, 10 a. m., president, Sir John McFadyean, opened the morning session by briefly reciting the conditions that confronted the Congress. He then presented a resolution that had been drawn up by the officers. The resolution was read in English, French and German, suggesting an adjournment of the morning session, to meet again at 3 p. m. to transact such business as would bring the Congress to a close. The resolution was supported. The Congress again convened at 3 p. m., and after a business meeting, as prescribed by the constitution, the chairman, with unmistakable emotion and regret, gave utterance to the words which brought the Congress to a close. The disappointment and regret of the whole-hearted British veterinarians was evident on all sides. It seemed as if a pall had come over everybody; and in silent sympathy the few foreigners present—mostly Americans—left the hall with a feeling of mingled pride and sympathy for the great efforts put forth by the home officers and members, and for their fortitude in shouldering their disappointment. During the closing session the chairman announced that the reception which had been planned for that evening would be held, and he expressed a hope that all members and their families would be present. This delightful function occurred at the Natural History Museum, where the members had the rare treat of listening to the most charming music by the string band of the Royal Regiment of Artillery while delicious refreshments were being served. It is unfortunate that our British friends could not have heard the complimentary expressions voiced, but the REVIEW assures them that their generous hospitality and good fellowship did not fall on barren soil. J. F. D.

OFFICIAL STENOGRAPHIC REPORT; INCLUDING PRESIDENT'S ADDRESS AND RESPONSES BY FOREIGN REPRESENTATIVES.

The official opening meeting of the Tenth International Veterinary Congress was held at the Central Hall, Westminster, S.

W., on Monday morning, the 3rd Aug., Sir John McFadyean, President of the Organizing Committee, occupying the chair. Although many of the foreign delegates, particularly the French, German and Austrian, had returned home owing to the outbreak of the war, there was an excellent attendance, the delegates from other countries appeared in large force, and most of the prominent veterinary surgeons of the United Kingdom and the Overseas Dominions attended.

The President—Ladies and gentlemen, to my great regret I have to announce that we have just learned from the Honorary President of the Congress, the Right Hon. Mr. Walter Runciman, President of the Board of Agriculture and Fisheries, that he is unavoidably detained, and it will therefore not be possible for him to attend here and declare the Congress open. I am quite sure that you share the regret which the members of the Organizing Committee have felt during the last few minutes with regard to his absence. We must proceed with the formal business of this meeting, and I therefore, as Chairman of the Organizing Committee, declare the Congress open.

ELECTION OF PRESIDENT OF THE CONGRESS.

Prof. A. E. Mettam—Gentlemen, on behalf of the Organizing Committee, I have the greatest possible pleasure in proposing that Sir John McFadyean be elected President of the Tenth International Veterinary Congress. (Cheers.)

Maj.-Gen. F. Smith, C.B.—I have great pleasure in seconding that.

The resolution was carried by acclamation.

The President—Ladies and gentlemen, permit me to thank in the first place Prof. Mettam and Maj.-Gen. Smith for having nominated me as President of this Congress, and in the second place to thank the members most heartily for having elected me. I need hardly say that I recognize the great honor which attaches to this office. I must add, however, that I am filled with misgivings as to my ability to discharge the duties as they ought to be discharged, but I can only say that no effort will be lacking on my part to discharge those duties in such a way as will gain your approbation.

I may, perhaps, be allowed a few minutes in which to trace the history of the series of gatherings of which this is the tenth.

The first International Veterinary Congress was held at Hamburg from the 14th to the 18th July, 1863, and it was convened on the initiative of the late Prof. John Gamgee—a fact which

is a legitimate source of pride to British veterinary surgeons. In the month of April of that year Prof. Gamgee had issued a circular, in which he invited teachers in the various veterinary colleges, and practicing veterinary surgeons from all parts of Europe, to attend a Congress to be held in Hamburg during the ensuing summer, and requested those who intended to be present to communicate with Prof. Hering, the Director of the Veterinary School in Stuttgart. In this circular it was pointed out as a highly important fact that, hand in hand with the increase in commerce between the different countries of Europe, and with the increased facilities for the sale and rapid transport of the cattle necessary to meet the growing food requirements of Western Europe, there had been during the preceding twenty years an increased prevalence of contagious diseases among cattle, sheep and other farm animals. Notwithstanding this fact there was a lamentable absence of reliable statistical information regarding the mortality among animals caused by plagues which were spread by the international trade in cattle, an ignorance which was held to be responsible for the fact that some States had not yet taken any adequate steps to protect their interests in this connection, and which also explained the injury inflicted on certain countries by the efforts of others to diminish their losses by exporting their own infected animals. The circular went on to express the hope that the representatives of veterinary science from all parts of the Continent would unite in an endeavor to formulate a uniform system of dealing with the contagious diseases of animals. To this end it was recommended that those desiring to take part in the Congress should, by contributing papers or otherwise, supply information regarding the following:

(1) The extent to which the different contagious diseases occurred in their respective countries.

(2) The import and export trade in cattle for slaughter, and the directions in which contagious diseases tended to spread in each country.

(3) The most successful means of treating the different contagious diseases.

It was suggested that after consideration of the information thus obtained the Conference might adopt resolutions for transmission to the various Governments as the basis for legislation with a view to the prevention of epizootic diseases. Gamgee was not very hopeful that the recommendations made by the Congress would receive the attention which they merited from the different European Governments, but he expressed the

conviction that the opportunities which such a Conference would provide for discussion and interchange of opinions could not fail to advance veterinary science throughout the whole of Europe.

When the first Congress met in Hamburg in 1863 it was attended by 102 members and Dr. Hering was elected President, and Prof. Gamgee, one of the two English representatives, was elected one of the vice-presidents. At the first meeting it was resolved that rinderpest and contagious pleuro-pneumonia should first be discussed, and that other subjects should be considered only if time permitted.

The conclusion arrived at with regard to the first of these diseases was that past experience justified the view that the incubation period did not exceed nine days, and that the then customary 21 days period of quarantine might with advantage be shortened.

A series of resolutions were passed with regard to contagious pleuro-pneumonia, the most important being (1) that the disease should be combated by the slaughter of all diseased animals and by the inoculation of those which had been exposed to infection, and (2) that within one year after the end of an outbreak the sale of the surviving animals should only be permitted for slaughter.

At its fourth sitting the Congress debated a highly important subject, viz., the question as to which diseases of animals should be included in a general law with regard to contagious maladies. The list eventually adopted included rabies, anthrax, glanders, and farcy, foot-and-mouth disease, mange or scab, rinderpest, contagious pleuro-pneumonia, sheep pox, malignant foot rot in sheep, and the disease of horses which is now generally known as dourine.

Other subjects considered at the Congress were the best methods of dealing with sheep pox, the desirability of each country publishing statistical information regarding the occurrence of infectious diseases within its borders and regarding the traffic of animals, and finally the desirability of founding special veterinary research institutes for the investigation of animal diseases.

It does not appear from the report of the Congress that Prof. Gamgee took a very active part in the discussions, but he contributed to the proceedings a remarkably interesting document which is printed as one of the appendices to the report. In this report he called attention to the enormous losses which had during recent years been caused in Great Britain and Ireland by con-

tagious diseases introduced from abroad, and he gave figures which appeared to justify the view that the annual loss from disease among the cattle, sheep and pigs in Great Britain and Ireland exceeded £6,000,000.

In the concluding sentences in this report he states that during the previous eight or twelve years he had spared no effort to call attention of his countrymen to the manifold dangers connected with the importation of cattle from abroad. It was, he said, far from his desire to suppress the foreign trade in animals altogether, but he predicted that if the British Government in collaboration with those of the Continent did not keep a sharp eye on the health of their own as well as of foreign cattle, the trade in foreign animals must within a very short time come to an end, which is one of several remarkable prophesies made by Prof. Gamgee that have since been fulfilled.

The second of the International Veterinary Congresses was held at Vienna in August, 1865, and it was attended by 160 members. On this occasion rinderpest was again under consideration, and it was again recommended that the period of quarantine against the disease should be reduced from 21 to 10 days. Recommendations were also made with regard to the importation of hides, horns, etc., from countries in which rinderpest prevailed. A new subject was introduced in the shape of rabies, and there was also some discussion as to the laws with regard to warranty, and the occurrence of anthrax or Siberian plague in Russia.

At the third Congress, which was held at Zurich in 1867, rinderpest and pleuro-pneumonia figures on the programme, and, for the first time, the subject of professional education and the organization of a proper veterinary service in each country was considered.

The fourth Congress was held at Brussels in September, 1883, and the programme again included contagious pleuro-pneumonia, professional veterinary education, and the organization of veterinary services, and, for the first time, tuberculosis in cattle was made one of the subjects for discussion.

The fifth Congress was held in Paris in 1889, and the members discussed the following question: The formation of an international sanitary service, the inspection of meat, and tuberculosis.

The sixth Congress was held in Bern in September, 1895, and the principal subjects then discussed were pleuro-pneumonia, international regulation of trade in cattle with the object of pre-

venting contagious diseases, inoculation with a view to diagnosis or for the purpose of protecting or curing animals, tuberculosis, swine fever and swine plague, the use of the flesh of tuberculous animals from the point of view of public health, and the influence of veterinary science on social development and prosperity.

At the seventh Congress, which was held at Baden Baden in August, 1899, the measures to be taken against the spread of the disease by international trade in cattle was again down for discussion, and for the first time foot-and-mouth disease appeared in the programme of these congresses. Other subjects debated on this occasion were meat inspection, anatomical nomenclature in veterinary science, tuberculosis, including the use of the flesh and milk of animals affected with the disease, epizootic diseases of the pig, and the relationship of human and veterinary medicine.

At the eighth Congress, which was held at Budapest in 1905, there was a more extensive programme than in the case of any of its predecessors, and for the first time the proceedings were conducted in sections as well as in general meetings. For the first time also tropical diseases of animals were brought under discussion. The other important subjects debated at this Congress were serum therapy and infectious diseases, foot-and-mouth disease, tuberculosis, parturient apoplexy, the application of tuberculin and mallein and swine fever.

The ninth and last Congress preceding this was held at the Hague in 1909, and the subjects discussed at the general meetings were swine fever and swine plague, the *rôle* of veterinary surgeons as experts in zootechnical questions, the sanitary control of milk and the obligatory inspection of meat, the prophylaxis and pathology of protozoan diseases, avian tuberculosis in relation to tuberculosis in mammals, Governmental efforts against tuberculosis and the modes of infection in these diseases. A large number of other important subjects were specially considered in the sectional meetings.

It might almost be said that the holding of congresses, National or International, is one of the characteristics of the age we live in. There have not been wanting critics who maintain that as a means of advancing knowledge the Congress system has within recent years been overworked, and that there is a marked tendency for congresses that are ostensibly scientific to degenerate into social gatherings where the chief object of the arrangements is to afford pleasure and entertainment to the members. I venture to say that no such charge could properly be brought

against the International Veterinary Congresses, although the advantages to be derived from social intercourse between the members have never been overlooked. The intervals at which they are now held are not so long as to destroy the useful link which is formed by the attendance of many of the same members at successive congresses, nor so short as to exhaust the list of subjects worthy of consideration at an international gathering, or to render discussion stale.

With regard to the success of the Congresses in promoting the objects for which they were founded, there can be no difference of opinion. Their primary purpose is to bring fresh views and supposed new discoveries in any department of veterinary science to the crucial test of criticisms by the higher experts. They thus serve to correct errors and to diffuse knowledge among the members themselves. It would be a mistake, however, to represent these congresses as existing solely for the purpose of eliminating error and extending knowledge among the members of the veterinary profession. The proverb that prevention is better than cure applies as forcibly to animal as to human diseases, and a glance at the programmes of past Congresses shows how fully that has been realized by the members of the veterinary profession, since the great bulk of the papers and discussions have been concerned with the prevention of contagious diseases among the domesticated animals. But prevention nearly always requires concerted action enforced by legislation, which, in turn, must have the intelligent support of the people interested if it is to be effectual. One of the purposes of the congresses must therefore be to spread to the widest possible extent among the interested laity a knowledge of the fundamental facts regarding the causes of preventible diseases. There is no need to be dissatisfied with the work of past congresses in this respect, for to their influence one can trace many of the laws which during the last fifty years have been passed with a view to exterminating or holding in check the epizootic diseases of animals, including those which are communicable to human beings. It would unfortunately be easy to show that incalculable sums of money would have been saved by some countries had their Government paid earlier heed to the resolutions passed at some of these congresses.

As one intensely anxious for the success of the present Congress, I can only express the hope that as a mark of the advancement of veterinary knowledge and the veterinary profession throughout the civilized world, it may deserve to rank with its predecessors.

I propose to ask the Hon. Secretary to give a short account of the work of the Organizing Committee in making preparations for this Congress, but before I sit down I should like, on behalf of the Committee, and indeed of the whole of the veterinary profession in the United Kingdom, to extend a warm welcome to those foreign members who have honored the Congress with their presence. (Cheers.) I need hardly say that we deplore the fact that their number has been reduced owing to the lamentable international developments of the last few days. (Hear, hear.)

Ladies and gentlemen, it is part of the business of this opening meeting to elect the other officers of the Congress on the recommendation of the Organizing Committee. I therefore have the honor to propose that Prof. Mettam, Prof. James McCall and Prof. Bradley be elected Vice-presidents of the Congress.

The motion was carried by acclamation.

The President—I have next formally to propose that Sir Stewart Stockman be elected the General Secretary of the Congress, and that Mr. F. W. Garnett be elected Treasurer.

The motion was carried by acclamation.

The President—Furthermore I beg to move that Mr. Share-Jones, Maj. Todd, Mr. A. L. Sheather and Prof. Wooldridge be elected Secretaries for the general meetings.

The motion was carried by acclamation.

The President—According to the statutes of the Congress, this meeting ought also, on the nomination of the Organizing Committee, to appoint one President, two Vice-presidents, and whatever is thought to be the necessary number of Secretaries for each of the Sections of the Congress. I must explain that the Organizing Committee has within the last few days been placed in a position of great difficulty in that connection, because unfortunately quite a considerable number of the foreign members whom we desired to elect as Presidents or Vice-presidents of sections are not here, and at the moment we are not prepared to nominate Vice-presidents of the different sections, as we are not sure who will be actually present. With the consent of the meeting it is suggested that the election of Vice-presidents of sections should be deferred until the second general meeting to-morrow, when it will be put down as the first item on the agenda.

The recommendations of the Organizing Committee with regard to the positions of President and Secretaries are as follows: That Dr. de Jong be elected President and Mr. Brittlebank and Mr. Cappurro be appointed Secretaries of Section I.

Of Section II. it is proposed that Prof. Mettam should be elected President, and Mr. Edwards, Mr. Sheather and Mr. Rucher Secretaries.

Of Section III. it is the desire of the Committee that Prof. Bang should be appointed President and that Mr. Minett and Dr. Lander be appointed Secretaries.

Of Section IV. it is recommended that Prof. Williams be appointed President, and that Mr. Hobday, Mr. Reynolds, Prof. Gofton and M. Barrier be appointed Secretaries.

Of Section V. it is proposed that M. Piot Bey be elected President, and Major Carr and Mr. Lawrence be appointed Secretaries.

May I take it that those recommendations are acceptable to the Congress?

The recommendations were carried by acclamation.

The President—With regard to this item of business, I have to intimate that apparently it will not be necessary to elect any officers to Section VI. It was a very small section as regards proceedings, and apparently there are no reports to submit to it, and therefore we do not propose to elect any officers to Section VI.

I will now call on the Honorary Secretary of the Organizing Committee to give to the members a short account of the preliminary work which was undertaken with regard to making the arrangements for this Congress.

(*Sir Stewart Stockman's report appears on page* 694).

Representatives of the various countries then addressed the Congress, thanking the Government and the Organizing Committee for the invitation that had been extended to them to attend. Those who spoke included M. Degive (Belgium), Dr. Paulo Parreiras Horta (Brazil), Mr. Keitera (Japan), Prof. Gavrilesco (Roumania), Dr. San Martin (Cuba), Dr. E. Perroncito (Italy), Dr. Holth (Norway), Dr. Vladimiroff (Russia), Dr. Edward I. Unanue (Argentina), Dr. S. P. Nystedt (Sweden), Mr. W. Littlewood (Egypt), and Dr. Eichhorn (United States of America).

Dr. B. Bang (Denmark), who received a very hearty welcome on rising to speak, said: Mr. President, ladies and gentlemen: As a delegate from the Danish Government, and on behalf of my colleagues from Denmark, I beg permission to express our warmest thanks for the kind welcome which has been extended to us, and to offer our sincerest wishes for the success of the Congress. But for the present serious circumstances, I feel convinced that

this jubilee Congress would have maintained the standard of its predecessors, nay, have surpassed it; and even now I sincerely hope that it will be successful, in as far as the great benefits that science, agriculture and public health can draw from the discussions of the important questions that are on the program will once more be made evident, and thus truly honor the memory of the English veterinarian, Mr. Gamgee, who, fifty years ago, initiated these International Veterinary Congresses. (Cheers.)

Dr. D. A. de Jong (Holland), who also received a very cordial reception, said: Mr. President, ladies and gentlemen: In the name of the Royal Dutch Government, which I have the honor to represent, I beg to express my thanks to the British Government for the kind invitation received by my country to attend this Congress. We would have come in larger numbers to meet the learned men of the English profession, and to show the Organizing Committee that we are much honored by the preparations that have been made for a successful Congress and for the cordial invitation which we have received, but circumstances have prevented it. On behalf of my country and of my Dutch colleagues, I again thank Great Britain and the British members of the profession for the kindness with which the Dutch members have been received. (Cheers.)

Mr. J. O. Bunster (Chili), said: Mr. President, ladies and gentlemen: As a representative of the Chilian Government, I beg to convey to you the Government's best wishes for a most successful Congress. Chili has not been represented at former Congresses if I remember rightly; but being on a continent which produces such a tremendous quantity of cattle for the food of the world, we take a great interest in the veterinary profession. It would appear grotesque, if it were not so serious, that we at the present moment are here trying to save the lives of animals, while the continent of Europe is doing its best to increase the mortality of human beings at a terrible rate. (Hear, hear). Let us hope that the war will not last long, and that England, as she is doing now for animals, will also take a very important part in saving millions of lives of human beings. (Cheers.)

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The twenty-fifth annual meeting of the above society was called to order by President Switzer, on August 11, 1914, at Rochester. The address of welcome to the city of Rochester

was given by Mr. T. F. Magrath, secretary to Mayor Edgerton, who was to have welcomed the society to Rochester, but had been called away from the city. Dr. Robert W. Ellis, of New York City, responded to the address of welcome, after which President Switzer delivered a splendid, masterly address, which was very inspiring. The rest of the morning session was given to committee reports. At the beginning of the afternoon session, Dr. W. G. Hollingworth, as chairman of the committee on the twenty-fifth anniversary, gave the report for his committee, and, with his usual enthusiasm, suggested at the conclusion of his report, that as we were starting out on the second quarter of a century it was a good time to make advances that would contribute to the uplift of our profession and put us on record as standing for the principles of humanity that most of us practice, despite statements to the contrary in the lay press, calling attention to a recent one in the New York *Herald*. He proposed that the New York State Veterinary Medical Society, at its twenty-fifth annual convention, adopt as its slogan the humane treatment of animals. His proposal was just as enthusiastically received, and the resolutions committee later presented a resolution covering that point, which was adopted by the society, and forms part of this report to follow. After other committee reports a paper on *Colic* was presented by Dr. R. W. Ellis, which was discussed at some length. A paper on *Some Results from the Retesting of Tuberculous Cattle*, by Drs. J. G. Wills and Chas. Linch, was next presented, illustrated by lantern slides. Adjournment was then taken until evening, when Dr. Walter G. Hollingworth presented a paper entitled *The Advisability of a Live Stock Sanitary Board in New York State*. This paper seemed to arouse considerable enthusiasm amongst the members of the society, and the general feeling was undoubtedly in favor of the establishment of such a board. A committee was appointed by the president to look into the matter. Dr. R. R. Birch then presented a very carefully prepared paper entitled *A Study of Hog Cholera Transmission*, which was most interesting and instructive. The programme for the second day included a paper by Dr. V. A. Moore, on *The Phenomena of Infection and Immunity*, *The Preparation and Standardization of Vaccines, Antitoxins and Serums*, by Dr. C. P. Fitch, *Some Principles of Therapeutics*, by H. J. Milks, and an extemporaneous address by Prof. E. A. A. Grange, entitled, *Remarks Upon Recent Advances in Veterinary Education.*

Election of officers concluded the day's session, with the following results: Dr. P. A. Fish, Ithaca, was elected president; Dr. Otto Faust, Poughkeepsie, was elected vice-president, and Dr. H. J. Milks, Ithaca, was re-elected secretary-treasurer.

At the close of this, the second days' session, the members, visitors and ladies were directed to a car that had been chartered by the local committee to convey them to Ontario Beach, a pretty lakeside summer resort, where, after a sumptuous meal of fish, chicken, or similar good things, the evening was devoted to recreation and folly, in which the most staid person present participated to the full. The morning of the third day saw the opening of the clinic at Bartels' Sale Stable, on Lake avenue, where plenty of clinical material was on hand, and plenty of room, both inside and outside, to operate on it.

Report of the Resolutions Committee.

Whereas, The Directory of Practising Veterinarians of this State, issued by the Society, is now incomplete and practically exhausted; therefore, be it,

Resolved, That a committee be appointed to publish a new edition of this Directory, and that a copy shall be sent to each member of the Society.

Whereas, It is one of the duties of the Veterinarian to restore as far as possible sick and injured animals to health and usefulness; and

Whereas, In some cases such restoration requires medical and surgical treatment often of a difficult nature; therefore be it

Resolved, That this Society go on record in favor of the use of local and general anaesthesia whenever surgical operations of a painful nature are to be performed, and that in all details of medical treatment and care the comfort of the patient shall be considered as far as possible; and further be it

Resolved, That this Society shall at this, its 25th anniversary, adopt for its slogan, "The Humane Treatment of Animals."

Whereas, The prevention of disease within the State can be more effectively controlled by prophylactic measures, by intelligent sanitation and by a campaign of education among public health authorities, breeders and owners of live stock; be it

Resolved, That the New York State Veterinary Medical Society recommend a consideration of these principles with special reference to the proper construction and disinfection of common carriers, exhibition stables and public markets for the exchange of live stock.

Whereas, Various persons residing within the State of New York are now, and for greater or less periods of time prior hereto have been, engaged in the practice of veterinary medicine as defined by Sub. 6 of Sect. 210 of Art. 10 of Chap. 49 of the Laws of 1909, otherwise known as the Public Health Law of the State of New York, within said State, without being qualified so to do and without lawful registration, and in violation of the provisions of Art. 10 of Chap. 49 of the Laws of 1909, aforesaid, and also in violation of Sect. 1762 of the Penal Law of said State, or in violation of one or more of the provisions of said laws; and

Whereas, Section 224 of Article 10 of Chapter 49 of the Laws of 1909, aforesaid, confers authority upon any incorporated veterinary medical society of the State of New York to bring actions in the name of Counties wherein such violations occur for penalties therein provided; and

Whereas, The New York State Veterinary Medical Society now in session and to which this resolution is presented is duly incorporated under the laws of the State of New York as a veterinary medical society; and

Whereas, Provision has been made by said Society for the appointment of a committee of three of its members to act as a prosecuting committee, such committee to be appointed by the president at each annual meeting, for the purpose of investigating instances of illegal practice of said profession; now, therefore, be it

Resolved, That actions be instituted in the Supreme Court of the State of New York, or in such other court or courts within said State as may be proper, by said New York State Veterinary Medical Society, pursuant to the provisions of Section 224 of Article 10 of Chapter 49 of the Laws of 1909, aforesaid, in behalf of the County or Counties wherein such violations have occurred or may hereafter occur, against any one or more persons now practicing or who may hereafter practice veterinary medicine in violation of Article 10 of Chapter 49 of the Laws of 1909, aforesaid, or of Section 1762 of the Penal Law, aforesaid, to recover the penalties or obtain the relief thereby provided, or for such other penalties or relief as may hereafter be provided; and be it further

Resolved, That the Prosecuting Committee of said Society be and it hereby is authorized and empowered to institute and maintain such action or actions for said Society against any such person or persons and to do every act necessary to be done in

relation thereto, including the accumulation of evidence, employment of an attorney, in the event that this Society has not at the time an attorney in its employ, employment of necessary counsel, etc.; and be it further

Resolved, That the officers of said Society be and they hereby are authorized to verify in behalf of the Society any complaint or complaints, or other papers, which may be presented to them for verification in connection with any such action or actions, providing they have information to warrant their so doing; and be it further

Resolved, That the President of said Society be and he hereby is empowered and directed to appoint special members of the prosecuting committee, in addition to those already provided for, one to be selected from each county in which this society has a member or members residing, and that said appointees shall be members of said prosecuting committee for the purpose of doing any of the acts necessary to be done in obtaining information in regard to illegal practitioners residing or practising in their respective counties, procuring evidence against such persons, representing this society in court and doing any and all other acts necessary to be done in instituting and maintaining actions against such illegal practitioners as hereinbefore provided, such appointees, however, to act only in relation to matters arising within their respective counties and not otherwise.

Resolved, That this society extend its thanks to its officers and members of the Committee on Arrangements for their efforts in bringing about this successful meeting and entertainment of its members and guests.

Robert W. Ellis, Chairman,
G. T. Stone,
P. A. Fish.

The Clinic.

Case 1. Bay Gelding—Roaring operation. Operator, Dr. J. N. Frost, assisted by Drs. Taylor and Ide. Cocain anesthesia. In recumbent position. Dr. W. B. Switzer demonstrated the use of his hobble on this animal.

Case 2. Bay Mare with Quittor—The animal was confined upon the operating table, cocain anesthesia used. Upon operating it was found that an open joint existed, so that it was thought best to destroy the animal. Operator, Dr. Frost, assisted by Dr. Ide.

Case 3. Bull Bitch—Spaying operation. H. M. C. ad-

ministered one-half hour before operation. Anesthesia very good. Median line operation. Drs. Milks and Webber.

Case 4. Fistulous Withers—Chloroform anesthesia administered by Dr. Currie. Operators, Drs. Ide and Morrow.

Case 5. Dr. Conkey demonstrated spaying of heifer.

Case 6. Caponizing Rooster—Dr. A. D. Moore.

Case 7. Caponizing Rooster—Dr. A. K. Dean.

Cases 8 *and* 9. Autopsies on two sheep affected with *Strongylus contortus*.

These are the cases as far as we were able to get them; but some others were also operated upon, which will be published with results in a later issue.

In closing this report of the twenty-fifth anniversary meeting of the New York State Veterinary Medical Society, we feel that we want to say a word of commendation to the committee of arrangements, for the very excellent program, both intellectual and social, which they had prepared and so successfully carried out, and a word of appreciation of the comfortable hotel accommodations and courteous treatment at the hands of the hotel management, and last but not least, to express our delight with the city of Rochester, at once a bustling business centre and a city of homes, the beauty and comfort of which are most striking.

MISSOURI VETERINARY MEDICAL ASSOCIATION.

The above association held its 23d annual meeting at the Royal Hotel, Excelsior Springs, Mo., July 29 and 30, with about one hundred members present. The local committeeman, Dr. E. J. Johnston, had secured a covered roof garden seven stories up for the meeting, and the sessions were made very enjoyable by a delightful, refreshing breeze during the entire two days.

Several interesting matters were discussed at the business sessions, including a proposition by Dr. S. Stewart to amend the constitution so that all important issues and the selection of officers might be decided by a referendum vote of the entire membership. The proposition comes up for action at the next meeting.

The election of officers resulted in the selection of Dr. W. E. Martin, of Perry, as President; Dr. E. A. Van Antwerp, of Brookfield, as Vice-President; and Dr. Chas. D. Folse, of Kansas City, as Secretary-Treasurer. Thirty-seven new members were

taken in, which makes the membership now total one hundred and seventy-four. It was decided to hold the 1915 meeting in St. Louis in July.

An attractive program was offered, including a very interesting paper on "The Veterinarian's Humane Duty," by Dr. A. H. Holkenbrink, of St. Joseph; and a review of "The Problem of Liability in Practice," by Dr. F. F. Brown, of Kansas City. The spirited discussion of all the papers and reports of cases betokens an aggressive future for the association.

The afternoon of the second day was devoted to a diagnostic clinic made up of some twelve or thirteen cases of unusual character. One member was selected to take charge of a case and the other members gathered about to personally examine the case, to listen to the clinician's elucidation, to ask questions on mooted points or to contribute of their experiences with similar cases. The demonstration of caponizing by Dr. E. L. Young, of Grandview, who operates on several thousand annually, proved attractive to those not accustomed to doing this operation. The clinical feature of the meeting proved highly interesting and very instructive.

On Wednesday evening a banquet was served in the dining room of the Royal Hotel, at which about one hundred veterinarians and ladies were present.

CHAS. D. FOLSE, Secretary-Treasurer.

NOT BLOWING IT IN ON AUTOS.—Builders of horse-drawn vehicles in all parts of the country are finding a constantly increasing demand for their products. Many factories are crowded for room and are planning additions to their plants, and from various sections come reports of newly incorporated companies which will engage in the manufacture of various styles of wagons, buggies, etc.

While thousands of vehicles of all description are purchased annually by city deliveries, yet the best customers of the manufacturers of horse-drawn vehicles are found among the prosperous farmers. Reports indicate that crops of wheat, corn, oats, potatoes, cotton, hay and tobacco will be far above the average this fall, and the optimism of the farmers has already shown its effect among the wagon and buggy factories of the land.—(*The Horse Lover.*)

NEWS AND ITEMS.

GRANULAR VENEREAL DISEASE HAS VITAL RELATION TO CONTAGIOUS ABORTION IN CATTLE.

(*From Office of Information, U. S. Dept. of Agriculture.*)

Washington, D. C.—The United States Department of Agriculture, in co-operation with Cornell University, will shortly publish a professional paper, Bulletin No. 106, entitled, "The Granular Venereal Disease and Abortion in Cattle." This disease may be defined as a chronic infection of the genital tract of cattle, manifesting itself in the form of granular or nodular elevations in the genital mucous membranes, chiefly of the vulva and less frequently of the vagina.

The importance of abortion and sterility in cows is rapidly becoming more acutely felt by breeders, according to the bulletin, and is each year playing a more serious part in the national economy. By interfering more and more with the reproductive powers of cows, these diseases exert an unfavorable influence upon the production of meat, milk and dairy products, decreasing the supply and increasing the cost.

Innumerable reasons have been assigned to account for abortion and sterility in cows. Abortion has been regarded as the result of blows, goring, kicks, slips, falls, various feeds, water, drugs, etc., and finally, when the abortions are numerous, to contagion. Sterility has been attributed also to a great variety of causes—to the character of the feed or water, to poverty, and over-fatness, and, as with abortion, when the cases are numerous, to contagion.

Veterinarians who have investigated abortion in cows in recent years have agreed that in a very large percentage of cases it is due solely to contagion.

The report then gives, in detail, the results of a large number of examinations of live cattle, supplemented by a large number of post-mortem examinations at slaughter houses. These examinations have shown the granular venereal disease to be present in a large number of cases of abortion.

The conclusions of the author as to the effect of this disease are as follows:

METHODS OF COMBATING ABORTION.

The granular venereal disease of cattle is, so far as known, universally distributed. From clinical observation it has a vital relation to contagious abortion. It is incurable in the present state of our knowledge, but may be greatly decreased in virulence.

The ordinary if not sole avenue of the entrance of the infection of contagious abortions is the genital canal, and the invasion antedates the sealing of the uterus, which ordinarily occurs within 30 days after conception.

In the present state of our knowledge little or nothing can be done to prevent abortion once the pregnant uterus is sealed and the infection of contagious abortion exists within the hermetically sealed cavity.

By systematic disinfection of the genitalia immediately following abortion or premature birth, and also in retained afterbirth and kindred infections of the uterus, the affected animals may be largely guarded against future sterility and abortion. It is even more important that the vaginae of heifers, whether virgin or previously bred, and cows shall be systematically disinfected for a period before and after breeding, until conception is assured.

It is equally important that the genital organs of breeding bulls be kept clean by regular disinfection, including washing immediately prior to and after service.

Most important of all, breeders of valuable cattle should institute definite, energetic and permanent efforts to guard newborn calves simultaneously against the three great dairy scourges —calf scours and pneumonia, abortion and sterility and tuberculosis.

PLAN FOR BREEDING SOUND ANIMALS.

The following are the author's recommendations for the breeding of sound animals:

We would outline the following plan for the breeders of pedigreed and valuable dairy cattle with a view to the production of cleaner and more efficient herds.

1. The construction or arrangement of independent maternity and calf nursery stables embodying all modern requirements for ventilation, light, heat, convenience for disinfection and ample facilities for the exclusion of flies. The stable should provide sufficient individual stalls for all calving cows and individual stalls for calves until at least three months old.

2. A cow which is about to calve should be well cleaned, and her posterior parts disinfected, after which she should be placed in a clean stall some days prior to expected parturition. Pending parturition the stall should be kept scrupulously clean and well disinfected. The tail, vulva, buttocks and udder should be disinfected twice daily. In order to avoid the danger of infection to the calf while passing through the vagina of the cow during birth, either by the infection of white scours, the granular venereal disease or other malady, the vagina should be irrigated daily with a mild disinfectant such as 0.5 per cent. Lugol's solution. Such attention to the vagina also tends to carry away any infections within the vagina which immediately after the opening of the cervical canal of the uterus at the time of calving may otherwise drop into the uterine cavity and there establish disease.

3. When the calf is born it should be received upon a clean antiseptic sheet and at once carried to a clean calf stall and rubbed dry. If it is desired to allow the calf to remain temporarily with the cow, great care should be taken to see that the bedding is kept clean.

After the calf has been dried, if not earlier, the stump of the navel cord should be disinfected. It should not be ligated. Prepare a warm 1 to 1,000 solution of corrosive sublimate, fill a goblet or cup with it, and, having the calf held in a standing position, press the vessel against the floor of the belly so that the stump of the naval cord is submerged in the disinfecting fluid. Retain it in this position for at least 10 minutes. Immediately afterwards dust the stump of the cord over liberally with a disinfecting desiccating powder, as alum and camphor, and repeat every 30 minutes until the stump is dry.

The body openings (mouth, nostrils, vulva of heifer and sheath of bull calf) should be disinfected with a 0.5 per cent. Lugol's solution.

4. Prior to drawing milk from the dam or other cow for feeding the calf, or permitting the calf to suck, the udder and adjacent parts of the cow should be thoroughly disinfected. The milk should be drawn in a sterile vessel under the strictest cleanliness. If the milk is from a cow not known to be free from tuberculosis, it should be sterilized before feeding. Individual feeding vessels should be used and regularly sterilized.

When calves have reached 3 months of age, it may usually be fairly determined if they are free from disease, in which case they may be handled in groups. These, however, should be kept

as small as economically practicable until the heifers have calved and are ready for the dairy. Even then the larger the number of animals in one stable the greater the risk of infection and the more destructive will it be if it gains entrance.

5. When breeding time for the heifer grown under the foregoing conditions is approaching, we would advise that her vagina be douched once daily for at least three weeks before breeding, at first with 0.5 per cent. Lugol's solution, and thereafter each second day with a 0.25 per cent. solution. The douching should extend over at least one estraual period, or 21 days prior to breeding, and followed for an equal time after breeding, or until it is determined she is pregnant. The bull should preferably have been grown in the same manner as the heifers he is to serve and his genitals douched in a similar way.

ACCOUNT OF THE NINTH INTERNATIONAL VETERINARY CONGRESS AT THE HAGUE, 1909.

PUBLISHED BY REQUEST OF PERMANENT SECRETARY.

Expenses.

Printing of reports, etc.	Gld.	17,363.145
Translations		767.62
Reports of meetings, stenography		1,861.225
Officers		2,423.055
Postage, telegrams, despatch		2,243.18
Traveling and lodging expenses		782.00
Collection of amounts of subscription		108.945
Remittance		44.38
Receptions, entertainments, secretary's office, administration		12,759.445
Excursions		1,871.14
Reception on the occasion of the inauguration of the Thomassen monument		201.71
Restitution of subscriptions		21.50
Permanent committee		516.995
Unexpected expenses		225.71
	Gld.	41,190.05

Receipts.

1,478 ordinary members	Gld.	14,780.00
84 extraordinary members		420.00
194 ladies members		485.00
Subventions of Dutch Associations		3,497.95
Transvaal Veterinary Medical Association		120.15
Department of Agriculture of South Africa		38.05
Printed papers		167.40
Interest		774.84
Unexpected receipts		32.80
Subvention of the Dutch Government		20,873.86
	Gld.	41,190.05

N. B.—Extraordinary subvention of the Dutch Government for the installation of the fixed Secretary's office at the Hague, Gld. 2,626.14.

The Minnesota State Fair and Exposition Popularizing the Horse, Says T. C. Simpson, Secretary.—Have you noticed anything new and strange in passing through the parks and over the boulevards this spring? Something which takes you back a few years and makes your blood quicken and your eyes sparkle, as of old? As I pen this letter, and look out of the window down Midway boulevard leading into Como Park, St. Paul's most beautiful pleasure ground, I see passing a beautiful park horse hitched to a spider phaeton being driven by one of St. Paul's most charming young ladies.

It looks like old times, and it is quite noticeable in our parks and upon our boulevards this spring, that the old love for the horse—the keen pleasure and delight in riding or driving, a beautiful thoroughbred horse, with head up and ears forward, is again taking hold. But like the tender plant that has been trampled under foot, this reviving of the old-time love for the driving and saddle horse must be nursed along carefully by those in a position to promote shows, the owners and breeders, until such time that it has again gained a firm grasp upon the American horse-loving people.

The Minnesota State Fair and Exposition has enlisted in the movement to again popularize the horse as a delightful means of recreation, as well as a beast of burden.—(*The Horse Lover.*)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n.....	Mar. 5-6-7, 1914	Auburn.....	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.....	June 10, 1915.....	141 W. 54th St..	P. K. Nichols, Port Richmond, N.Y.
American V. M. Ass'n.....	Dec., 28-31, 1914	New Orleans, La	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n.....	January 5-6, 1915 ...	Little Rock....	R. M. Gow, Fayetteville.
Ass'n Médécale Veterinare Française. "Laval".....	1st and 3d Thur. of each month.....	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. each month..	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha.....	3d Mon. each month.	S. Omaha, Neb..	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n.....	Monthly.....	St. Joseph.....	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n.....	December 10, 1913..	San Francisco...	John F. McKenna, Fresno.
Central Canada V. Ass'n.....	Feb. and July.....	Ottawa.....	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n.....	June and Nov.....	Syracuse.....	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. each month.	Chicago.....	D. M. Campbell, Chicago.
Colorado State V. M. Ass'n.....	January, 1914.....	Denver.....	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n.....	Aug. 4, 1914.....	Waterbury.....	B K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan., Apl., July, Oct..	Wilmington.....	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.....	3d Mon. each month.	Newark, N. J....	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	2d week, July, 1913..	Rochester.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 22-23, 1913.....	Atlanta.....	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.....			Louis P. Cook, Cincinnati.
Illmo Vet. Med. Ass'n.....	July 17, 1914	E. St. Louis....	L. B. Michael, Collinsville, Ill.
Illinois State V. M. Ass'n.....	July 15, 1914.....	Springfield.....	L. A. Merillat, Chicago.
Indiana Veterinary Association.....	Jan. 14, 1914.....	Indianapolis....	A. F. Nelson, Indianapolis.
Iowa Veterinary Ass'n.....	Pending.....	Pending.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n.....	Jan. 6-7-8, 1914.....	Manhattan.....	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb.each year	Lexington.....	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	2d Tues. each month.	Philadelphia....	Cheston M. Hoskins.
Lake Erie V. M. Association.....	Pending.....	Pending	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n.....	Sept., 1914	Lake Charles...	Hamlet Moore, New Orleans, La.
Maine Vet. Med. Ass'n.....	October, 1914.....	Lewiston.....	H. B. Wescott, Portland.
Maryland State Vet. Society.....		Baltimore.....	H. H. Counselman. Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. each month.	Young's, Boston.	W. T. Pugh, Southbridge.
Michigan State V. M. Ass'n.....	Feb. 3, 4, 1914.....	Lansing.....	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n.....	July 8-9, 1914	Northfield.....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.....	1914.....	Vicksburg	J. D. Townsend, Louisville.
Missouri Valley V. Ass'n.....	Jan. 27, 28, 29, 1914	Kansas City,Mo.	Hal. C. Simpson, Denison. Ia.
Mississippi Valley V. M. Ass'n.....	Semi-Annually.....	Galesburg, Ill...	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n.....	July, 1915.....	St. Louis.....	Chas. D. Tolsc, Kansas City.
Montana State V. M. A.....	Sept. 24, 25, 1913.	Helena.....	A. D. Knowles, Livingston.
Nat'l Ass'n B. A. I. Employees.....	2d Mon. Aug., 1914.	Denver, Colo...	S. J. Walkley, 185 N. W. Ave. Milwaukee, Wis.
Nebraska V. M. Ass'n.....	1st Mo. & Tu.,Dec.'13	Lincoln, Neb ...	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.....	1915.....	Ithaca.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June 23, 1914	Wilson.....	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n.....	Week of July 20, 1914	Fargo.....	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.....	Nov. 1913.....	Delphos.....	E. V. Hover, Delphos.
Ohio State V. M. Ass'n.....	Jan. 14, 15, 1914....	Columbus.....	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.....	Annually.....	Upper Sandusky.	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.....			J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Fall, 1913.....	Oklahoma City..	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	1st Week in Feb.1914	Toronto.....	L. A. Willson, Toronto.
Pennsylvania State V. M. A.....	Mar. 3, 4, 1914.....	Philadelphia....	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President....	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. each month.	Portland, Ore...	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.....		Mon. and Que...	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June.....	Providence.....	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns.....	Pending.....	Pending.....	B. K. McInnes. Charleston.
South Illinois V. M. and Surg. Ass'n..	Aug. 4-5-6. 1914....	Salem.....	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors.....	1st Wed. fol. the 2d Sun. each month..	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	Dec. 16, 1914.....	Reading.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....		Philadelphia....	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.....	Pending.....	Madison	S. W. Allen, Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.	Jan.. Apl., July, Oct..	Los Angeles.....	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp...	4th Tues. each month	407 Illinois Ave.	H. R. Collins, South St. Joseph.
Tennessee Vet. Med. Ass'n.....	November. 1914.....	Nashville.....	O. L. McMahon, Columbia.
Texas V. M. Ass'n.....	Nov., 1913.....	College Station..	Allen J. Foster, Marshall.
Twin City V. M. Ass'n.....	2d Thu. each month..	St. P.-Minneap..	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Spring of 1914.....	Salt Lake City..	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n.....			G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. each month	514 9th St., N.W	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ...	1st Sat. each month.	Wash'ton, D. C.	J. M. Cashell, 2115 14th Street.
Vet. Ass'n of Manitoba.....	Feb. & July each yr..	Winnipeig.....	Wm. Hilton, Winnipeg.
Vet. Med. Ass'n of N. J.....	July 9, 1914.....	Montclar.....	E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City.....	1st Wed. each month.	141 W. 54th St..	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City.....	T. F. O'Dea Union Hill, N. J.
Virginia State V. M. Ass'n.....	July 9-10 1914.....	Staunton.....	Geo. C. Faville, North Emporia.
Washington State Col. V. M. A.....	1st & 3d Fri. Eve....	Pullman.....	R. J. Donohue, Pullman.
Washington State V. M. A.....	June, 1915.....	Yakima.....	Carl Cozier, Bellingham.
Western N. Y. V. M. A.....	June 24, 1914.....	Buffalo.....	W.E.Fritz,358 Jefferson St.,Buffalo
Western Penn. V. M. Ass'n.....	3d Thu. each month..	Pittsburgh.....	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad.....	Feb. 10, 11, 1914....	Milwaukee.....	W. W. Arzberger, Watertown.
York Co. (Pa.) V M. A.....	June, Sept.,Dec.,Mar	York.....	E. S. Bausticker, York, Pa.

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